

INDUSTRIAL ORGANIZATION

MALCOLM KEIR

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Cotton spinning in South.

Farmer benefits of coop.

INDUSTRIAL ORGANIZATION

An Introduction to the Study
of Economics

By

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in America"



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MALCOLM KEMP

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To
CECILE HANNA KEIR

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PREFACE

Few people have more than a vague conception of the complex industrial order by which the ordinary routine, day-by-day necessities of life reach consumers. Much less is known concerning the complete organization of our national business life. The principal reason why many find economics difficult and uninteresting is because they lack knowledge of the subject matter with which economics deals.

To understand and appreciate theoretical economics requires as a primary necessity a comprehensive vision of the whole field of business activity. College undergraduates and others who cannot bring this essential to their study of economic theory flounder ignominiously in their work. Their subjective thinking is vitally in need of the broad objective facts of industrial organization. Likewise, men who undertake specialization in any one of the branches of economics, such as banking or labor problems, are handicapped if they do not know the relationship of their particular subject to the whole range of economic activity.

The purpose of this book is to supply the background of facts about our industrial organization, so that any subsequent delving into economics may be more vivid and real—to present a picture in perspective of the interlocking factors that make up our national industrial life.

In writing, I have relied upon the researches of a large number of specialists and have drawn freely upon their publications. To them all I acknowledge my indebtedness. To one man, however, I must accord special mention. Much

of the material in the chapters dealing with finance, banking, foreign trade, and business organization was collected by Professor E. W. Goodhue, my colleague and friend, and to his whole-hearted, unstinted aid I am deeply indebted.

MALCOLM KEIR.

Hanover, N. H.,
March 1, 1923.

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INDUSTRIAL ORGANIZATION

INTRODUCTION

Economic Organization.—One of the commonest facts of life is the relative scarcity of economic goods and services. Scarcity is a fundamental factor in economic organization. Human wants are constantly changing in direction, or intensity, and there is no observable limit to the number or variety of our wants. With growth of population, changes in tastes of the people, and increasing money incomes, there develops a constant pressure of wants upon goods, for the reason that most goods are scarce and are obtained only through the expenditure of effort. Thus it is that wants are growing relatively faster than the production of goods to satisfy those wants.

This fact occasions a necessity for economizing, for spreading goods out more or less unevenly over many wants, and for the effort not only to produce more goods, but to produce them more cheaply. The main purpose of economic organization is to produce goods abundantly and as cheaply as possible.

Primitive Lack of Organization.—In a primitive form of life, in places where climate is hospitable and nature generous, wants may be satisfied without much forethought or complicated productive organization, as is evidenced by the lives of savages in many parts of the world. In a few remote sections of the world, among scattered families—the backwash of civilization—a rough-and-ready, hand-to-mouth order of existence is found. In the United States social groups of this kind exist

in the mountains of Kentucky or Tennessee and in the Ozarks of Missouri or Arkansas.

Modern Society Organized.—Such forms of economic order, however, are the exceptions rather than the rule, and are typical only of savage or pioneer societies. Wherever we look today we see evidences of some sort of order in production, transportation, and exchange of goods. Even isolated individuals or self-sufficient families, whether in northern Maine or western Wyoming, find it necessary to organize their forces and apportion their time and effort in production in order to prevent gluts or famines.

Economic organization dates back to the beginnings of human history. Our modern industrial organization is not a new thing, but merely an old principle of apportionment which through the years and under the spur of profit-making has taken on many complex forms. Our economic institutions have grown in such number and variety, with so much interlacing and crossing, that we are now surrounded by a network of institutions which make possible production, transportation, and sale of goods.

By economic organization, then, we mean all the mechanism which exists at any given time for producing and distributing goods and services that gratify wants. It includes a wide range of activities crystallized into institutional form.

Example of Organization.—A humble buyer of a ready-to-wear suit of clothes depends upon a complicated economic organization. If we wished to trace this suit to its origin we should have to go first to the sheep ranges of Montana, where breeding or feeding the sheep by one set of men would be succeeded by the shearing of the fleece by specialists in that business. The shorn fleece packed in greasy bags would be shipped a thousand miles or more to Boston merchants, whose sole occupation is the sorting, grading, and sale of raw wool. A

group of buying specialists working in the interests of specific manufacturers and aided by bank credits would then prepare their sorted and graded purchases for shipment to a mill.

Arrived at the mill the wool would go through a score of processes until it appeared as finished cloth, when it would become in turn the property of a series of middlemen assisted by banks or transportation agencies. At length the cloth would arrive at the factory of a clothing maker, say in New York City.

After another lengthy series of processes the cloth would become a suit, but the suit must itself be handled by others—wholesalers, jobbers, and retailers. When the final consumer, the purchaser and wearer, buys the suit he probably does so on a credit basis which involves the services of a local bank.

After the suit is worn out it passes to a rag merchant who cuts it up, sorts out its parts, and ships the rags to a manufacturer. This operator shreds the rags to the original fiber, and begins all over the processes of spinning, weaving, and marketing of cloth, with subsequent sale to a clothing maker.

This process may be repeated several times. The original wool might first be incarnated as an evening suit, which upon reincarnation would become a clergyman's pulpit outfit, and then upon second reincarnation would be worn by a laborer as his "Sunday-best." Eventually the wool might become a horse blanket, and when this was worn out, sold to a ragman, and shredded, it would be used as the filler for cloth manufactured into overcoating to be worn over a new evening suit.

A story similar to this one could be told of nearly every commodity entering into commerce for our own private consumption. What has been indicated by the recital concerning the suit is to be expanded into details in chapters that follow, not only for clothing but for all of our basic commodities.

Specialization and Interdependence.—The development of economic organization is closely related and definitely limited

by specialization and interdependence. By specialization we mean the splitting up of the productive process into smaller, separate parts. Thus the "jack-at-all-trades" gave way to the miller, the blacksmith, the cobbler, or the merchandiser. Eventually there came also separation on a functional basis and there arose the retailer, the wholesaler, the manufacturer, the farmer and the banker. With the advent of machine industry the process itself was subdivided into a large number of specialties and we had as a result the speed and skill, and also the monotony and fatigue found in our modern shop.

It does not require much observation to discover that with growing specialization there was an increasing amount of interdependence, that trades and processes came to form merely parts of a complex whole, and that our economic life had swung away from the simple, direct relations of a frontier community to become involved, indirect, and impersonal. If a farmer, instead of providing all the things necessary for his existence, turns his attention solely to raising wheat, he becomes dependent upon a large number of other producers, transportation lines, manufacturers, wholesalers, retailers, and banks.

Accordingly, one of the most striking facts about our present economic order is its dependence upon co-operation. And this co-operation is not merely between trade and trade, industry and industry, but is national and international in extent. In actual fact, the world is bound together by an infinite number of invisible economic ties. One has merely to trace as we have done the life history of a single suit of clothes, to appreciate the number and variety of co-operative agencies involved.

The limits of economic organization are set by specialization. Where there is little specialization, there economic organization is simple and direct. If the family supplies all its needs from the farm on which it lives, comparatively little organization is necessary. But once let specialization start, there then follows a definite need for a producing, transporting, and selling organization.

The Market.—There can be little or no specialization, and hence little or no economic organization, without a market for the goods produced. Where the family is entirely self-sufficient and is producing for the mere purpose of getting a livelihood, there is no surplus and a market is not necessary. But with specialization comes production of one thing, or at the most a few things, in a quantity much too large for the consuming power of a single family. This fact gives rise to systems of exchange, or, in other words, creates the need for markets.

By market, then, we mean an area in which prices are somehow fixed and exchanges take place. In our modern industrial organization these prices in the main are determined by competition. At first the market will be a simple one, perhaps limited by the area of a single neighborhood or village. Later, as the wants of people increase, the market area widens, and we may have an entire district engaged in the making and exchange of goods. Finally, through developing specialization, changes in transportation and trade routes, improved communication, and the breaking down of economic isolation, the market area becomes as wide as the world. For example, today the United States buys sugar from Cuba, coffee from Brazil, wool from Australia, silk from China and Japan, and sells manufactured products, grain, oil, and the like to Europe, South America, and Asia.

More and more the manufacturer, trader, or banker in this country is thinking in terms of a world market, and in so doing is creating ties and sympathies with the rest of the world. So close are the economic ties that in 1920 the failure of silk merchants in Japan caused a drop in the price of silk stockings in America. How greatly a war in Europe affects the economic life of America was well demonstrated between 1914 and 1919. The French invasion of the Ruhr in 1923 threw out of work many Canadian coal-miners. In the United States today this reaching out for the foreign market has no

small effect upon the thought, the political relations, and the commercial practices and policies of our country.

The Modern Industrial Order.—During three hundred years, industrial organization in the United States has evolved from the simple, direct, household system to the complex, indirect, modern industrial order. Hand methods, local markets, and personal relationships have given way to machine methods, national and world markets, and impersonal relations. Production mainly for subsistence has been converted into production for profit. The United States has passed rapidly through the stage of industrial organization represented by the household, the craft, the domestic, and the small-scale factory. During the past sixty years there has been evolved a highly intricate factory system. Business has grown enormously in variety and volume; in many important lines, large-scale industries together with much combination and consolidation have become fixed in our system. Business adventuring has become increasingly risky and difficult. With specialization, production for profit, and sales in a broad market, has come a highly sensitive and interdependent organization.

In all this later development there has been an almost unwarranted exploitation of resources and men in the mad race to make money. The period has been highly materialistic and mercenary. In any such period, it is perhaps not surprising to find the rights of property apparently regarded as more important than the rights of human beings.

In any scheme of economic organization, man takes raw materials, capital, labor, and other productive factors, and turns them into the stream of production. Under the competitive system, the allocation of factors and the type of organization is largely determined by the motive of gain. It is the task of subsequent chapters to point out what the factors are, how they are organized and articulated, and how they function.

CHAPTER I

THE LAND OF THE UNITED STATES—HIGH- LANDS AND VALLEYS

Fundamental Character of Land.—Of all the influences that determine man's success in his struggle to live, the most basic is land. For it is from the land that man draws his most urgent necessities. Food he obtains directly from the plants, trees, or bushes that grow in the soil, or indirectly from animals that themselves feed upon the large or small plant life. Shelter he derives immediately from land forms such as caves, or from products of the land cunningly fashioned to suit his needs whether a hut or the most marvelous palace. From the traditional fig leaf to the most carefully tailored evening suit, the land in one way or another furnishes man with his clothes. For fuel man has ranged from actual land products such as wood, to converted land products such as dung, coal, oil, or electricity. Likewise, man's tools and his luxuries are derived immediately or remotely from the land.

Since the backbone of our industrial order is land, we must give it the foremost consideration in analyzing our economic organization.

The Size and Extent of the Land of the United States.—The extension of a land over zones unlike in topography, climate, and resource, may be counted an asset because this condition assures variety. Mountains and plains, cold and hot regions, each have their characteristic resources and their inhabitants practice occupations appropriate to their environment. Florida differs from Massachusetts, southern Califor-

nia is unlike northern California, and Kansas City does not resemble Philadelphia. As a consequence, Massachusetts may sell cloth, shoes, or machinery to Florida in exchange for oranges; northern California may trade her lumber for her southern sister's fruits; and Philadelphia may barter carpets for Kansas City's beef.

Diversity in environment, then, not only produces variety in occupation, but gives rise to a large internal domestic trade. The transportation necessary to haul products from one section to another creates many additional occupations. The United States therefore is fortunate in being big.

Size in Relation to Climate.—Although Great Britain, France, and Germany, all possess internal variety, none of them has the extremes that are presented in the United States. To be sure, in Europe there are considerable ranges of climate from west to east because eastwardly the modifying influence of the ocean is so lessened that inland points, such as Vienna or Moscow, have a hotter summer and a colder winter than corresponding places on the coast, such as Brest or Liverpool; but no European nation covers sufficient area from west to east to experience radical climatic transitions. On the other hand, the United States measures 3,000 miles from west to east, a distance that permits the widest diversity in climate. The European countries are also too small from north to south to gain distinctive climatic contrasts. France and Germany extend north and south through about six and a half degrees, and the United Kingdom reaches ten. The United States stretches southward for twenty-five degrees. As a consequence, those dissimilarities of resource that are due to modifications of weather are found more fully in the United States than in European nations.

Size in Relation to Population.—Size alone, however, is not a sufficient gauge of the opportunities a region may afford,

for consideration must also be given to the number of people dwelling on the land. The highest degree of opportunity is attained in a large country richly endowed with natural resources but with a scanty population. Although our population is more numerous than any one of the continental nations, except Russia, the overwhelmingly large area of this nation—containing a million square miles more than does (European) Russia, the second largest—together with its corresponding natural wealth, means that in the United States the opportunity for the individual is very great. Only our smaller states with the largest masses of people approach the density of population abroad, where from 200 to 400 per square mile is normal. Although New Jersey, for instance, has a density of 420, Massachusetts 479, and Rhode Island 566, the average for our whole country is only 35.

In a country's early growth, an increasing population does not necessarily mean a lessening of opportunity, for with greater numbers a larger subdivision of labor takes place, a factor favorable to efficient production. The larger a country is and the more natural wealth it possesses, the longer it will take to arrive at land shortage. Although it is more than three hundred years since men began to draw upon the resources of our own country, we have only recently begun to feel the pinch of population, and that only in a few special places.

Types of Land and Their Economic Responses.—But after all, the size or extent of a nation's land is not sufficient in itself to warrant judgments as to a country's fitness to lead in economic development. The quality of the land, its capacity of furnishing men with the means of living, is a more important consideration. This quality is dependent on the types of land included within a political jurisdiction. These types may here be conveniently distinguished according to differences in forms, or variations in climate.

The most marked difference in land form is dependent

upon the degree of altitude attained. Thus land is broadly distinguished as high or low according as it is above or below 1,000 feet above sea level. Mountains, of course, are the most conspicuous highlands.

Mountains—As Beneficial Barriers.—One of the most immediate influences mountains have upon man is to limit or hinder his freedom of movement. This barrier aspect is not without its beneficial results, for the mountains that upon one side defy a man's ascent, may equally thwart his enemies on the other. The barrier becomes a protection.

The Appalachians have had a significant share in American history for just this reason. They crowded the early English settlements into the relatively limited area between the Atlantic and the mountains and thus enhanced the colonies' political unity. On the other hand, the French, able to explore at will the open reaches of the St. Lawrence, the Great Lakes, and the Mississippi Valley, developed the individualistic life of isolated pioneers, trappers, and traders. The far-flung French dominions consequently were difficult to bring under political control. When the British and French came into conflict, the Appalachian rampart had prepared the way toward a British victory, for in unity and co-operation there was power.

Mountains—As Detrimental Barriers.—But there came a time after the Revolution when the crowded three million or more hemmed behind the Appalachians were forced to seek more room in the Tennessee and Kentucky regions beyond the barrier. Then the mountains checked necessary expansion. In our present life the ramparts of the Appalachians, the Rockies, and the Sierra Nevada-Cascade Ranges separate the United States into four distinct regions: the East, the Middle West, the Inland Empire, and the Pacific Coast. Each section has developed a life peculiar to itself. Sectionalism in economic activity and particularly in politics has been promoted by this

segregation of territories behind mountain ranges. Modern engineering skill prevents the isolation from being complete but at the same time the enduring crests of the mountains stand in the way of complete national unity.

Mountains—As Boundaries.—Since mountains are barriers they have frequently been chosen for boundaries—the Pyrenees, for example, separate France from Spain. There was once talk of erecting a republic along our Pacific Coast, using the Sierras and Cascades as the natural boundaries. The discovery of gold in California so enhanced the value of the coast to the eastern section of the nation that transcontinental railroads were rushed across the mountain ranges in order to bind the east and far west together. Our mountains therefore serve merely as boundaries for our subordinate political units.

Mountains—As Influences in Rainfall and Stream Flow.—Mountains, however, are not merely barriers. They also perform for man the valuable function of rain-catchers. It happens that warm air can carry more water vapor than cold, so if warm air is cooled some of the vapor it contains is condensed into rain or snow. Inasmuch as the higher altitudes are colder than the lower, ascending air currents are forced to yield upon the flanks of the mountains some of the burden of moisture. Consequently the windward slopes of mountains are usually better watered than the land at the base or that on the leeward side.

Mountains consequently are the sources of the brooks, streams, and rivers that supply the lowlands with their needed water. The Missouri, Arkansas, Rio Grande, Columbia, Colorado, and most of their tributaries rise in the Rocky Mountains. The Kennebec, the Merrimac, the Connecticut, the Delaware, the Susquehanna, the Potomac, the Savannah, the Tennessee, and the Monongahela, all originate in the Appalachian system.

Mountains not only start these great waterways; they also conserve them. The excessive rainfall upon the heights promotes forest growth. The forest floor acts somewhat like a sponge in absorbing rainfall and so prevents great floods, by letting the water soak through to streams in a more regular and orderly manner. Where the mountains are snow-capped either the whole or a part of the year, they conserve the precipitation of winter for the heated summer when by the melting of the snow the waterways are fed. In the pockets of the mountains, too, lakes are formed which act as reservoirs preserving the flood waters for the periods of drought.

For water power, irrigation, and commerce a constant, even stream flow is highly desirable. Water-power projects must be based upon the minimum, not the maximum flow, and floods are likely to damage or wreck the works. The most economic utilization of water for power occurs where there is the least variation between high and low water. Irrigation projects are akin to water-power in their dependence upon even stream flow, while the danger or interruption of commerce due to floods or drought needs no comment. In so far as mountains function to regulate streams, they are therefore valuable assets to men.

Mountains—As Sources of Minerals.—The forces that have produced mountains are likewise among the agencies by which the most important minerals and metals are formed; as a consequence, mountains are nature's storehouses of these materials. Impregnated with gold, silver, copper, and lead, the Black Hills of South Dakota are said to be the wealthiest 100 square miles in the world. Iron comes from the highlands of Minnesota; copper (more than half the world's supply) is mined in the mountains of Arizona, Montana, Michigan, and Utah; lead is dug from the mountains of Missouri, Idaho, Utah, and Colorado; the zinc supplies of the United States are furnished either from the Ozarks or the

Rocky Mountains; the latter also produce most of our gold and silver. For the lesser metals a similar story could be told. To the hills man looks for his commercial or precious metals.

Of the minerals that are not metals, man is also largely dependent upon mountain regions for his supplies. This is true of graphite, slate, precious stones, building stones, asbestos, and potash. It also applies to anthracite coal.

As a matter of fact, of all the valuable minerals the only ones that are not generally found in upland districts are bituminous and lignite coal, petroleum, natural gas, sulphur, and phosphate rock. Since mountains provide man with most of his mineral raw materials, mining is one of the most characteristic industries of mountain districts.

Mountains—As Resorts.—Mountains, like the seacoast, are attractive to men as resorts in which to spend the leisure of vacations. Invigorating air, beautiful scenery, fishing, hunting, and canoeing give to mountains a peculiar hold upon the hearts of men. The resort business of the United States involves the expenditure of millions of dollars, and so should be classed among our leading sources of livelihood. Our predilection toward mountain resorts makes them important as income-producers and a valuable part of our economic organization.

Plateaus.—Outside of the United States, plateaus—the second principal type of highlands—are not so favorable to man as mountains. Few plateaus have ever been the seats of the mighty; the only table-land nations to rise to power were in Tibet, Mexico, and Peru, where elevation modified climate and gave protection from marauders. Most plateaus are on the arid leeward sides of mountains, or are too high and cold for man's development. Some, such as the Sahara, lie in the path of drying winds that have blown for leagues over land instead of sea.

The plateaus of the United States are more fortunately situated for they are either located in humid regions, or possessed of resources especially attractive to man.

The Southwest Plateau.—The only plateau in our country that partakes of desert characteristics is the southwestern portion of the Colorado Plateau. The winds that cross the Sierras are not merely dried in passing the mountains, but are warmed and compressed in their descent so that they not only do not precipitate moisture but tend to suck up any water that lies upon the land. But even on this plateau there is enough moisture to furnish vegetation to support immense flocks of sheep. In fact, this plateau is one of the two principal sheep-raising districts of the nation.

From the point of view of interest the Southwest Plateau is one of the most unique spots in America. The scenic wonder of the Grand Canyon, the archeological remnants of an ancient civilization testified by monuments, mummies, and pottery antedating those of Egypt, the architectural beauty of the Spanish missions, the unusual geologic formations—all these prove of perennial interest to tourists and scientists.

Aside from its sheep, there is little in the Southwest Plateau to warrant exploitation. Irrigation helps limited areas agriculturally, but only the Rio Grande, the Pecos, or the Gila with their tributaries are available for water supply. Even these are not large sources of water and have already been utilized to a point close to their capacity. This southwestern plateau as a consequence is likely to remain as a district sparsely inhabited and slightly developed.

Inland Empire.—The northwestern plateau situated between the Rockies and the Cascades and variously designated as the Columbia Plateau, the Snake Plateau, or the Inland Empire, differs in a marked way from the Southwest Plateau. It is dry, of course, since it lies to the leeward of

the Cascades, but enough rain falls to support dry farming and sheep-raising. Irrigation projects supported by the Columbia—the second largest river in America—the Snake, the Hood, the Wenatchee, the Yakima, and the Spokane rivers, are both numerous and prosperous.

The soil is unusually fertile, for it is comprised for the most part of weathered lava. Vast Vesuviuses of the past poured forth lava into this great basin 150,000 square miles in extent and filled it to a depth of 3,000 feet. When this lava decayed it furnished one of the best soils known. Where irrigated and set out in orchards, the land sells for as high as \$1,000 an acre.

The growing of apples has advanced to such a productive point that the Inland Empire is the principal source of commercial apples for the whole country, selling twice as many boxes of apples as its nearest competitor, New York State. In addition, much attention is given to growing alfalfa, a crop that is nearly always accompanied by cattle-raising. Potatoes, sugar-beets, and seeds (particularly of alfalfa), peas, and beans are important products of the region. The "Big Baked Potato," advertised by one of the transcontinental railroads, comes from the Idaho portion of the Inland Empire.

This plateau, therefore, despite its dryness, not only does not conform to the world rule of barrenness but actually constitutes one of the agricultural assets of the nation. It is so wealthy, and so distinctly set off by the mountains surrounding it, that it is proposed to erect it into a separate state to be called Lincoln.

Allegheny Plateau.—In eastern United States fronting the western side of the Appalachians is another great plateau called the Allegheny Plateau. On the windward side of the mountains and in a section of the United States plentifully supplied with rain, this plateau does not suffer from scarcity of water. In the north, in New York, Pennsylvania, and Ohio

where the hills are low and rounded, much attention is given to dairying. In the south, the principal crop is corn. In the central section of Kentucky and Tennessee, where the hills of the plateau are too steep to warrant much agricultural development, lumbering becomes the principal industry. The whole plateau constitutes the most important hardwood resource of the United States. As a result, wagon and cheap furniture manufacture are characteristic of places all along the edge of the region. Tanning, dependent on oak, chestnut, and hemlock bark, has also been an important source of livelihood.

But the greatest resources of this plateau have been its coal mines, oil wells, and iron. It has 20,000 square miles of land containing bituminous coal, some of which, notably that of West Virginia, is of the highest grade steam coal known in the United States. Although this region by no means contains all the coal of the country, it has been highly influential in the industrial development of adjacent districts both on the east and on the west. Oil was first discovered in the Pennsylvania section of the plateau in 1859. The highest grades of petroleum still are produced within its borders, but new regions such as Oklahoma, California, and Texas have long since outdistanced it in total numbers of barrels supplied. The three states named produce more than half of our American output, whereas the Allegheny Plateau accounts for less than one-fifth. Iron manufacture has been one of the activities of the plateau, especially along the Ohio River. Hardwood for charcoal, and later coking coal, account for this enterprise as well as local deposits of iron ore, Pittsburgh of course attaining the leadership in the industry.

Despite the great wealth of forests, coal, oil, and iron in this region, it remains in a relatively backward stage of development. The fact is due to its great diversity of surface, rendering transportation unusually arduous. The Wabash Railroad spent 35 million dollars to get into Pittsburgh across the plateau, while the Delaware, Lackawanna and Western

was forced into prodigious engineering feats in order to run its right-of-way across the valleys and along the hilltops. The Lehigh Railroad also spent much money in traversing the plateau. Many sections are even yet pitifully lacking in transportation facilities. Although cities such as Pittsburgh, Youngstown, and Akron exemplify modern progress, many other towns of the region are isolated and backward. The plateau is a source of wealth but does not retain much of it within its own boundaries.

Piedmont Plateau.—East of the Appalachians there is another plateau, familiarly named “the Piedmont.” This region, 50 miles wide at the north and 125 miles in width in the south, extends from the Hudson River southward to Alabama, and contains approximately 80,000 square miles. Geologically it is an ancient plain, raised and stream-cut into numerous segments having the appearance of hills or mountains. The presence of these hills shunted the Civil War campaigns either eastward to the Atlantic coastal plain or westward into the Great Valley and beyond.

The southern Piedmont has been an important source of cotton. In fact, except for Texas or certain portions of the states bordering the Mississippi, the Piedmont has been the leading cotton-producer not only of the United States but also of the world. Cotton has been crowned as king because it fitted the southern Piedmont environment, because its production was in accord with the habits and customs of the native population, and because it was the safest investment where crop mortgage systems prevailed.

In the central Piedmont from North Carolina to the James River, Virginia, cotton has been replaced by tobacco. The northern Piedmont has been devoted to small-scale general farming, with wheat, corn, or dairy products predominating. The population has been largely composed of Germans, or English and Pennsylvania Quakers. Thrifty and conservative,

they have continued a modest prosperity at all times while their neighbors have often suffered privation succeeding lucrative but unwise success.

The manufacturing of the Piedmont has been an exploitation of its agricultural resources. In the Carolinas and Georgia, cotton manufacture has progressed so rapidly since its establishment in 1880, that now the Piedmont follows New England as the nation's chief producer of cotton cloth.

North Carolina and Virginia have been for many years important centers for the manufacture of tobacco. Greensboro, Winston-Salem, and Durham in North Carolina, and Richmond in Virginia have a national reputation in this business. Lynchburg in Virginia is becoming known also for its manufacture and distribution of shoes.

North Carolina, manufacturing both cotton and tobacco, and forging ahead in agriculture, has outlived the haughty disdain with which it was once regarded by its neighbors, and in truth now pays the highest income tax of any of the southern Atlantic states.

Valleys—As Highways.—Between mountains, or ranges of hills, and in eroded portions of plateau, we find valleys. Their foremost value to man is as arteries of communication.

The most famous valley roadways have been the Hudson-Champlain Valley, the key to the strategy of three wars; the Hudson-Mohawk Valley, the easiest path from the Atlantic to the Great Lakes; the Great Appalachian Valley, the strategic battleground of the Civil War; the Ohio River Valley, the immigrant pathway to the middle west; the Mississippi Valley, a world wonder; the Columbia River Valley, fabled as part of the Oregon Trail and vital to the modern commercial northwest; and the Great Valley of the Pacific Coast that knits California, Oregon, and Washington into a great, unified, and almost separate, republic.

Where valleys come to a head near each other but upon

opposite sides of a mountain range, they provide the best means of passing the mountain barrier. The valleys of the Westfield and Hoosac rivers perform this service for the Berkshire Hills, those of the Susquehanna and Monongahela for the Appalachians, those of the Missouri and the Columbia or Snake for the northern Rockies, and those of the Arkansas, the Rio Grande, the Colorado, and the Gila for the southern Rockies. Man travels where water has bored the way.

Valleys—As Water-Power Sites.—Water in its process of deepening valleys furnishes man with another valuable aid; where the water tumbles over ledges, power is created. Man first seized these sites to operate his grist and sawmills. Later he put his factories at the same place. Nearly all of our first factories were in valleys, and in creating towns drained the hilltops of their population. In New England this created a social problem that has not yet been solved. Many of the original factories forsook their water-power and turned to steam, but the towns that grew around the original water-power have continued to expand by the use of steam. That explains why so many of our industrial cities are in valleys. Lowell, Lawrence, Manchester, Waltham, Woonsocket, Worcester, Pawtucket, Springfield, Hartford, Waterbury, Brattleboro, Paterson, Philadelphia, Richmond and Augusta, all valley industrial centers, illustrate the point.

Valleys—In Agriculture.—But valleys are not alone useful for manufacturing; many are also important in agriculture. Valley soils are likely to have been enriched by river overflow, and the valley itself affords the protection helpful in the prosecution of farming.

Some of the most famous agricultural regions of America are found in valleys. The Connecticut Valley is famed for its tobacco, onions, and corn. The Great Valley of the Appalachians, because of its fertile limestone soil, is the only

farming district of the East that has been able to maintain itself in competition with the middle west.

The valleys of the Pacific Coast, of course, contain nearly all of the population and industry of that region. The principal industry is farming, some of it extensive and devoted to wheat or cattle but most of it now intensive and specialized in orchard fruits or vegetables. Los Angeles County makes the greatest return in wealth drawn from the soil of all the counties in the United States.

Irrigated Valleys.—In addition to these valleys, there are others in the west that have become famous farming districts because irrigation has been applied to them. The Great Salt River Valley of Arizona, of which Phoenix is the center, raises as its most interesting crop a particularly valuable long fiber cotton used primarily in the manufacture of automobile tires. The value of this crop for one year (19 million dollars) exceeded by 7 million dollars the total cost of the irrigation project, including the building of the Roosevelt Dam.

Nearly all of the principal river valleys between the 100th meridian and the Cascade-Sierra Nevada Mountains are more or less devoted to farming by means of irrigation. Such rivers as the Missouri, the Platte, the Arkansas, the Rio Grande, the Pecos, the Snake, the Columbia, the Gila, and Colorado, bear testimony to the truthfulness of the assertion. Valleys, therefore, either as means of communication, as sources of water-power, or as the home of agriculture have been of peculiar value to man.

CHAPTER II

THE LAND OF THE UNITED STATES—LOWLANDS AND CLIMATE

Plains.—In contrast with the mountains, plateaus, or valleys, much of the earth's surface comprises plains. Ordinarily plains are open territory with no forest cover and generally free from outcrops of rocks or boulders. Some plains are level or nearly so, while others vary from gentle rolls to distinct hills; but they are never rugged, or sharply divided.

As a result man may pass over a plain freely in any direction; communication is easy and uninterrupted by natural barriers except occasional streams. The latter, however, are generally shallow and easily forded. Roads and railroads are relatively easy to build upon plains.

Furthermore, the absence of hills or rocks makes soil tillage in plains territory not difficult, and favors large-scale farming where population is not too numerous. The soil is generally good, and contains mixed elements because in addition to the soil formed from the rocks below the surface, much of it has been borne to its place either by water and ice or by wind. Thus it can be used for a long time without artificial fertilization; but when increased population requires, it is capable of intensive cultivation in small tracts maintained or improved by fertilizers.

Plains therefore have been the centers of civilization, population, and power—as truly in the days of Ninevah, Babylon, or Egypt as in modern Prussia, France, or China. American history has been enacted first on coastal or river plains, and

now logically with the expansion of our people, in the great plains of our interior.

Atlantic Coastal Plain—The Past.—Stretching southward from the Hudson River and running across New Jersey and thence to Georgia and Alabama is the Atlantic Coastal Plain. Once this whole area was upon the bottom of the shallow sea which then lapped the foothills of the Appalachians. Later the sea bottom was raised and became dry land, but succeeding centuries witnessed a partial sinking of the outer edge of this land so that it again became sea bottom forming a sort of shelf under the water. Much of it was in this condition when the Jamestown settlers came to America in 1607.

The shallow offshore waters then, as now, were feeding grounds for fish, so that fishing at all times has been one of the occupations of the people along the coast. In the drowned valley we call Chesapeake Bay the shallow brackish waters were ideal for the bedding of oysters, so that from the earliest settlement to the present day Chesapeake Bay has been the center of the greatest oyster fishing industry in the world, and Baltimore ranks first in the business of oyster canning.

But fishing in this portion of our Atlantic Coast has never had the pre-eminence that it once attained further north in New England. The coastal plain itself offered too many opportunities in agriculture to warrant risking one's life in the pursuits of the ocean. In Maryland and Virginia, plantation owners both on the plain and along the foothills bordering the plain found wealth in the cultivation of tobacco. In the Carolinas and especially near Charleston, an aristocratic civilization was founded on the culture of indigo and rice. After the Revolution the plantations of the lowland and uplands alike devoted their energies to cotton production.

Early Agriculture Poorly Adapted to Atlantic Plain.—None of this agriculture was well adapted to the coastal plain

because the plain was originally low in fertility—thus differing from most plains—and the crop systems then in vogue were great soil robbers. When the plain was below the sea, the water leached from the soil most of its soluble elements, many of which were essential to plant life. Furthermore, the action of waves or currents created an extreme variability in the soil. When this sea bottom became land it was from the beginning relatively infertile.

It happens that tobacco takes from the soil great quantities of the scarcest plant foods, potassium and phosphorus. Ignoring this fact the plantationers sowed a segment of their holdings in tobacco and kept on planting in the same ground until the soil refused to yield a satisfactory crop. Then a new segment was cleared and the process repeated. By the time of the Revolution most of the original plantations had been ruined by this policy.

Further south, first rice or indigo, and later cotton, were raised by slave labor. Slaves are notorious despoilers. Having no interest in their work or in the ground upon which they labor, they are utterly wasteful and eventually ruin a district in which they live.

Slavery so exhausted the coastal plain and Piedmont soils that the peak of agricultural prosperity passed from the Carolinas and Georgia to Alabama and the rich new soils of the Mississippi bottom lands. By the time of the Civil War, Maryland and Virginia, and to a less but marked extent the Carolinas, had become slave breeders rather than slave users. Slaves themselves were the money crop; whatever they produced agriculturally was for their own sustenance rather than for sale.

After the Civil War the coastal plain was left with impoverished soil and a colored population. In New Jersey less than 5% of the population was colored, but in Delaware almost 20% were of African descent, while Virginia counted almost a third and Georgia a half of their population among black folk.

For a quarter of a century afterwards the coastal plain lagged in development, clogged by the double handicap of depleted soil and an inert race.

Atlantic Coastal Plain—The Present.—Twenty-five years ago a few men discovered that the sandy soils of the plain were admirably fitted for truck crops. The building of the Atlantic Coast Line Railroad hastened the development by providing access to market. Today the function of the plain is to supply the northern market with fresh vegetables the year round.

But the plain can never be fully utilized by man so long as he confines himself to this type of farming. Two per cent of the area of the plain, if intensively devoted to truck, would glut the markets of the whole country. After three hundred years the plain is just beginning to fulfil its natural destiny, namely, as a meat producer. Nitrogenous forage crops will improve rather than deplete soil fertility, while cattle or hogs in this region can remain in the open, barnless, throughout the year. When all the plain folk discover these facts and take advantage of them, their activities will fit their environment.

Boston Lowland.—In New England, too, the first settlements were made along the plain near the coast, the present town of Framingham marking the western edge of the favored district. As a consequence the early towns were strung along the shore or as far back from it as the coastal plain extended.

The massing of the population on the lowland had a direct bearing upon the industries conducted within the commonwealth. Commerce became the leading industry, with fishing and shipbuilding as corollaries, a condition which was unchanged for two hundred years.

During the first half century after 1800, political and economic changes made commerce unprofitable, but the condition of settlement which had been stimulated by commerce was of

great benefit to manufacturing, and aided it to take first place in the affairs of the district. For instance, the Portuguese population of New Bedford, attracted to the city by the trade of whaling, went to work in the cotton mills as operatives when the factories were erected; and the fishers' wives living in Marblehead and Salem, who had long bound shoes for Lynn "factors," followed the job into the shoe shops after machinery was adopted.

Interior Plains.—The whole interior of the United States between the Appalachians and the Rockies is a vast plain. Technically this plain has two parts, one called the Prairies and the other the Great Plains; the division coming at or near the 100th meridian. East of this line there is sufficient rainfall to promote grass growth in a continuous sod and to the entire area the name "prairie" is applied. Westward the rainfall becomes less with each fifteen miles of travel and is everywhere insufficient for continuous growth of grass. At the western edge of the Great Plains, so scarce are the clumps of grass that it takes 20 acres to support one steer.

Prairies.—The prairie section of the interior plain naturally has been more rapidly advanced. Into it floods of immigrants have poured both from the older east and from foreign countries. Soil, climate, and the open nature of the territory have promoted agriculture to a high degree. In fact this section not only feeds the whole nation but helps to feed foreign countries as well.

The Corn Belt.—The eastern section comprising the states of Ohio, Indiana, Illinois, and Iowa, has specialized upon corn production. Corn is by far our greatest agricultural resource, and not even our iron and steel manufacture can compare with it in value. An area twice the size of our wheat belt, half as large again as Italy, and nearly as extensive as the

whole of France or Germany, is devoted to this cereal. Nearly three-fourths (71%) of all the corn raised in the world is upon American farms.

The Animal Belt.—Because the corn is not shipped as such but is used on the farm, our corn belt is also our animal belt. Especially significant is the relation of the corn crop to the number of swine in the United States. There were almost three times as many swine in our country as were found in pre-war Germany, our nearest rival. The hog has become one of our most important meat animals and not only furnishes our domestic supply of pork, bacon, or ham, but provides a surplus for export. Likewise the corn of the prairie states is used to fatten cattle for market and to supply food for dairy stock. Horses, too, are bred and raised where corn permits a cheap food supply.

Other Resources of Corn Belt.—However, the corn belt is not limited to agriculture. It possesses vast stores of coal and natural gas. With these fuels for power, with living costs reduced by the agricultural abundance, and with a large home market in the increasing population of the middle west, manufacturing has advanced rapidly.

Indeed, everything points to the prediction that eventually the middle west will lead the nation in manufacturing. It is already the breadbasket; the future will probably find it the industrial center. If this prediction materializes, our plains will follow the rule that plains are the seats of national power.

The Wheat Belt.—West of the corn belt states, the increasing dryness causes farmers to substitute wheat for corn. In the corn states themselves much wheat is grown, especially in the southern counties along the Ohio River. Every state in the union except those in New England can claim at least 10,000 acres of wheat, but the greatest concentration of wheat

production is in Kansas, Nebraska, North and South Dakota, and Minnesota.

Wheat was developed from grasses of desert or nearly desert regions. Most at home in semi-arid climates, it is admirably fitted for the region of scanty rainfall in the United States. The small return per acre for wheat—hardly more than \$25—measured against such crops as fruit, sugar beets, hops, or tobacco that frequently yield \$1,000 an acre, makes cheap land and extensive farming a most desirable feature for profitable wheat production. The aridity of western Kansas or Nebraska so curtails the usefulness of the land that its sale is limited and therefore its price low. The average value per acre in Kansas in 1920 was only \$62—low indeed in comparison with the average value of Illinois land, \$187.59, and the value of corn belt counties in eastern Iowa or eastern Illinois, \$300.

Furthermore, the unbroken nature of the land in the wheat belt encourages the extensive use of machinery. In fact our American reputation for agricultural machinery is founded upon the large application of mechanisms to wheat. The character of wheat farming has had an important bearing upon this progress; the demand for labor is not continuous, for there is little cultivation required, but at planting and especially at harvest periods the need for large amounts of labor is intense. To meet this situation with human resources would require a large local surplus of labor upon which to draw when the occasion arose. The wheat belt does not fulfil this condition inasmuch as the population per square mile in Kansas in 1920 was only 21, in Nebraska 16, in North Dakota 9, and in South Dakota 8.

Wheat farmers can better pay the interest charges on mechanical equipment used infrequently than the upkeep of labor that is in demand but twice a year. Even to operate the harvest machinery the farmers must resort to migratory bands of laborers, or employ college or high-school students upon

vacations. With short but extreme demand for labor and with no local supply, it follows that harvesting wages are high, often as much as \$5 a day plus board and lodging.

Spring Wheat Belt.—Climate marks a distinction between the kind of wheat grown in Kansas or Nebraska and that of the Dakotas or Minnesota. The more southern states specialize upon "winter wheat" sown in the fall, grown in the winter, and matured in early summer. The Dakotas are too cold for this practice and so plant in the spring and reap in the fall. This "spring wheat" is harder than "winter" and contains more gluten; as a result it is superior for bread-making. This accounts for the pre-eminence of Minneapolis as a bread-flour milling center; the Falls of St. Anthony are the largest power source nearest the bread-wheat raising district.

The wheat sections of Dakota lie in an ancient lake bed, extending from the center of the eastern boundary of South Dakota to Winnipeg, Manitoba. Lake Winnipeg is a remnant of this ancient lake. The soil of the ancient lake bed is finely divided, easily worked, varied in plant food, and extraordinarily deep. Upon it farms of 75,000 acres have been known. Enough wheat to feed 800 people for a whole year has been taken from individual farms in a single harvest. Wheat has been put in the same soil for twenty years without artificial fertilization. These have been the "Bonanza Farms."

But since this kind of agriculture wastes soil fertility, there is a movement toward smaller farms and crop rotation. South Dakota already raises more corn than it does wheat. Both sections of the wheat belt also devote much acreage to oats upon which a large animal industry is founded. Quantities of flax, too, are grown for the seed, the basis for the linseed industries of the United States.

Unlike the corn belt, the wheat belt is not likely to develop manufacturing—except flour, slaughter, or dairy factories—because it lacks raw materials, power, fuel, and labor.

Great Plains.—West of the prairies where corn and wheat dominate, lie the Great Plains. Once the home of the buffalo, the Indian, or the trapper, this region later became the greatest free grazing range in the country. Fortunes were made with the greatest ease by the cattle barons; but wealth came with such little effort that the business was over-enlarged. Too many steers were put upon the limited pasturage available; the rule of 20 acres to a steer was disregarded. Cropping too closely and too frequently killed the grass range in great districts. Adding to the difficulties, sheep herders also began to use the range. Since sheep crop much closer to the ground than cattle, the flocks, thousands big, soon reduced the grass areas to still smaller proportions. Following the shepherd came the farmer, who fenced off portions of the range and held it as private property. The cattle man in self-protection was forced to take up land, fence it, and raise beef by the corral method. Then he turned his attention to careful breeding to get the largest results from his work.

These changes increased the expense of the cattle business and reduced the returns. The whole nation has felt the effects in the change from abnormally cheap meat to high prices. We have been forced by the mounting prices to change from a diet that included meat three times a day, to one that serves it but once a day, or still less frequently. Gradually we are being forced to the same limited meat consumption as older and more populous nations.

Coincident with these changes in the organization of the cattle business has gone the utilization of the streams of the plains for irrigation. The Platte, the Arkansas, and the Missouri have all been diverted in part to the land.

The irrigation farmer at first competed with the cattle overlord for the water, but has now turned to the beef business himself. The favorite crop of the irrigator is alfalfa, and this the farmer discovers can be most profitably sold in the concentrated form of meat animals. So part of the loss of the

free range is made up by irrigation products. The range has also been extended into high mountain pastures, some in the national forests. But neither the irrigation projects nor forests can keep pace with the demand for meat, and prices of beef products steadily mount with little relief in sight.

Lake Plains.—Among our American assets are not only the sea plains, the interior prairies, and the Great Plains, but also the narrow plains bordering the Great Lakes. These form the highways around the lakes for roads, electric lines, and railroads—thus concentrating the commerce, manufacturing, and population of the district; they are also of great service in agriculture.

Products sensitive to frost find the lake plains a favored area. Since water is both heated and cooled more slowly than land, large bodies of it act as governors over the climate of adjacent land, especially that which lies on the leeward side of the water. Such land has its spring season delayed and so escapes an early swelling of buds with a subsequent killing frost. Likewise its summer is prolonged and the early killing frosts of autumn are avoided. Hence fruit and bush crops which frosts will injure tend to collect in places where bodies of water reduce the frost danger. This explains why cherries, plums, pears, apples, grapes, blackberries, raspberries, and gooseberries are found in such abundance on the plains bordering the Great Lakes.

Although the lake plains are narrow they are so intensively cultivated that the crops aggregate among the most important in the United States. This is notably true in respect to apples and grapes. The orchards and vineyards, too, have the advantage of the large markets in the cities of the plains, such as Buffalo, Cleveland, Toledo, Detroit, Chicago, and Milwaukee.

Lake Plain Cities.—These cities, in turn, have sprung and grown on the plains bordering the lake because these regions

represent favorable junctions between land and water traffic. The lake plain cities serve as distributing centers, handling and forwarding necessities to the farms, and receiving or advancing outbound farm products. Out of this commerce manufacturing has arisen and has formed the basis for such businesses as slaughtering, flour milling, iron and steel manufacture in all of its branches, cereal beverages, shipbuilding, agricultural tools, farm wagons, work shoes, and overalls.

Of the five largest cities in the United States, three—Chicago, Detroit, and Cleveland—are on the Lake Plains. Furthermore, these cities are among the ones that are growing the most rapidly; Detroit, for example, has advanced from fifteenth to fourth rank in the last thirty years. The prairies and plains of interior United States, already the heart of our agriculture, bid fair to become the principal centers of manufacturing and population.

Climate.—So far we have been considering land in its relation to man's activities in accordance to the form in which the land is found. Form alone, however, does not account wholly for the usefulness of land to man. Whether or not land can be put to the services of man depends partly upon climate. Of the three factors entering into climate—temperature, precipitation, and wind—the first to be considered is temperature.

Temperature.—Although no temperature conditions yet discovered upon the earth's surface have proven insurmountable by man's adaptability—witness the Eskimo, the inhabitants of the Amazon country and of central Africa, the Tierra del Fuegians, and the Icelanders—yet temperature does have an effect upon man's advancement. Extremes of temperature so limit the gifts of environment and so restrict man's activities, that development of man's faculties is retarded. The greatest strides toward civilization have been made where the temperature is moderate.

This is due not so much to the direct influence of temperature upon man, for unless a man is weakened by disease, accident, or old age he can withstand any temperature; rather to the indirect effect upon the wealth or poverty of the gifts of nature. For example, temperature is vitally important in agriculture. Frosts kill, and high temperatures wither. Tropical plants and trees are limited in their northern extension by occasional severe weather that the districts north or south of the tropics experience. If a killing frost came but once in fifteen years it would eliminate plants so tender that frosts injure them. On the other hand, temperate zone plants or trees are cut off as if by a furnace blast, by the intermittent blazing days of the borderlands of the torrid zone.

Similar in kind but less in degree are the effects of extremes in temperature upon agriculture everywhere. Average temperatures are not the decisive elements, but the infrequent visitations of extremes. Many a man who has invested in orange groves in Florida or California has learned this lesson. Likewise the bitter winters of North Dakota determine that there if wheat be grown it must be "spring wheat," whereas the mild winter of Kansas permits farmers to plant wheat in the fall.

In manufacturing, extreme temperatures have a bearing. The shipbuilding industry, largely carried on out of doors, has moved southward from New England to the Delaware River and Hampton Roads, partly because the frequency of very cold days in the north causes cessation of work. The hot summer days of the prairies tend to push factories toward the great lakes where heat is modified by cool breezes from across the waters.

Rainfall and the Use of Land.—Rainfall, likewise, modifies man's use of land. Rainfall is highly influential in agriculture. Usually, if a region has less than 20 inches of rainfall per year, it is considered that farming is impossible. This

figure, however, can be modified according to the rapidity with which evaporation takes place, which in turn depends upon the dryness of the air and the velocity of the wind. Under favorable conditions agriculture has been carried on with 18 inches of rainfall.

The parts of the United States that have less than the required amount of rain lie between the 100th meridian and the Cascade Mountains. Of this territory the driest is found within the region known as the Great Basin lying between the Great Salt Lake and the Sierra Nevada Mountains. There are sections of this basin that have not known a rain storm in thirty years. The Basin as a whole is deficient in rainfall and agriculture is possible only where irrigation supplies the water or where there is sufficient ground water to warrant "dry farming." This latter is a method of preserving in the soil the scanty moisture that falls upon it. Deep plowing, the packing of the sub-soil, and the pulverizing of the surface accomplishes the desired result. By this method whatever moisture is in the soil may be retained over long periods of drought.

Largely, however, the Great Basin is given over to sagebrush and desert. The state of Nevada, lying within the Basin, had only 77,000 population in 1920, less than the city of Manchester, New Hampshire. The population per square mile in Nevada in 1920 was less than one person. In Utah it was 5.5 per square mile, and in Arizona it was only 2.9 per square mile. Compare these figures with the population per square mile in Rhode Island (556) or again in Massachusetts (479).

Lack of moisture, therefore, has relegated this region to one of relative unimportance. On the other hand, the Pacific Northwest has a rainfall of more than 100 inches per year. In this region the population is increasing four times as fast as in the rest of the United States. Consequently there is an important relationship between rainfall and population.

Rainfall and Health.—The amount of rainfall is also influential upon man's health. One of the bodily functions is the excretion, through the pores of the skin, of moisture containing bodily poisons. It is a law of physics that evaporation from a surface takes place most readily if the air around the surface is dry. Furthermore, the process of evaporation cools the surface from which the action takes place. Therefore bodily poisons pass through the skin most readily if the air be warm and dry. This will have a pleasing effect because the mere process will be cooling. If, however, the air be too dry, the operation takes place too rapidly and the skin becomes parched and cracked. It seems that man is in the most comfortable condition when there is about 65% to 70% humidity.

The result of these facts is that man finds it difficult to live where the humidity is high; on the other hand, man finds it also difficult to survive under the arid conditions of a desert. He can best perform his daily duties in a region where there is sufficient rainfall to saturate the air to at least 60% of the air's carrying capacity.

Rainfall and Transportation.—Rainfall is important also with reference to transportation. A region of plentiful rainfall is usually a district containing lakes, brooks, streams, and rivers. The streams and rivers become avenues of commerce, either directly upon their own waters, or indirectly through gouging out valleys where roads and railroads can be most easily built.

Wind—As a Soil Bearer.—The third element in climate is wind. The wind is important as the bearer of rain, as has already been noted. Wind is also the bearer of soil in the form of dust. Finely divided particles of the earth's surface are caught up by the wind and carried to far-distant places. There is so much soil of this character in certain places that a special name, "loess," has been given to it. Portions of the

soil of the prairie districts of the United States have this origin. Such a soil is generally rich because it has come from so many different sources and mingles the elements of goodness of each. Furthermore, it is easy to work because it is so finely broken up. Some of the best agricultural regions of the United States are therefore upon soils brought to the districts by the wind. Southern Nebraska is a case in point.

Wind and Health.—Wind has an influence upon man's comfort in living. If the wind be not too severe, it aids in evaporation from man's body surface, thus producing a feeling of exhilaration. The wind, too, is responsible for changes in weather and these have a beneficial psychological effect.

However, winds can be the sources of much discomfort and even danger. If the winds blow for days without any interruption, man becomes unconsciously irritated thereby. In the open places of the United States, as upon the Great Plains or the Prairies, this sort of thing is very likely to occur. Furthermore, in these open places also, differences in the temperature of the air are likely to give rise to circular movements known as tornadoes, which, sweeping over the plains and prairies, leave destruction in their wake. The winds of the Southwest Plateau are so constant that the Navajo Indians usually place stones over their corn-seed to hold it in place.

Climate and Civilization.—An analysis of the influence of climate upon civilization made by Ellsworth Huntington of Yale University has led to the startling conclusion that man is most benefited where the climate is variable. Continuous spring as at San Diego, California, or continuous winter as found in the Arctic Circle, or continuous summer such as is found in the southwestern sections of New Mexico or Arizona, are all equally bad for man's development of energy. A region where the sun never winks is just as detrimental as a region where the sun never shines.

It seems that man does his best work where sunshine and rain, where heat and cold, or where wetness and dryness succeed each other in rapid order. The greatest civilizations have been built up in regions where the climate was most variable. This is due to the fact that wherever great variation takes place there also great energy is liberated.

Following this line of reasoning Dr. Huntington shows that, so far as the United States is concerned, the greatest energy is developed in the northeast and in the northwest, with the result that these sections, first the northeast and more tardily the northwest, have received the greatest relative development.

Waste of Land.—Despite man's dependence upon land, he has grossly wasted it. The soil itself he has permitted to wash away, while his systems of agriculture have denuded the soil of its fertility. Nature keeps the ground covered, and thus by anchoring the soil maintains a rough balance between soil making and soil loss. But man removes the protective forests, grasses, and mosses in order to sow his crops. After the harvest, man is all too prone to let the soil lie exposed, when the rain washes the top soil into the brooks, streams, and rivers. It has been estimated that 4 million acres of land have been lost to the United States in this way. Since this amount constitutes nearly 1% of our total area in agricultural land and is sufficient for 100,000 farms of 40 acres each, one may see how serious a loss the nation has sustained.

Improper cultivation is also responsible for much waste in land. The tops and sides of hills are put in crops that are planted in lines parallel with each other and with open spaces between. Each of these becomes a waterway every time it rains until eventually deep gullies are formed. Farms in the southeast have been completely ruined within ten years by this carelessness.

In other cases little thought has been given to the strain

upon soil fertility occasioned by repeating a single crop in the same soil year after year. Tobacco, cotton, and grain lands have been depleted or ruined in this way. In the dry regions where irrigation is practiced, either the soil has been waterlogged, or evaporation has been so little considered that great amounts of alkali drawn from the soil beneath have been left upon the surface, eventually to poison and kill any seed planted within it.

Aside from the land itself, man has wasted or destroyed the products of the land. Noxious weeds, insects, and parasites have accumulated; cattle and plant diseases have ravaged unchecked; forests have been hacked down and burned; minerals and metals have been wastefully mined and wantonly used.

Land Conservation.—Only a great, new land such as ours could have withstood three hundred years of such treatment. But the actual exhaustion of portions of our land, and of some of its products such as forests, together with the threatened extinction of others such as anthracite coal, and the disappearance of free land—all these have at last awakened public conscience. We are beginning to take thought for the morrow. The people are being educated by government, state, and community agencies as well as by private individuals, to use the land more wisely, to stop waste, and to replenish or restore diminished resources wherever that is possible.

Since land is man's fundamental necessity, no one generation has the right to mistreat the land so grossly that future generations will be denied existence. Conservation of land is one of the most important, far-reaching problems that confronts this nation.

CHAPTER III

AGRICULTURAL ECONOMICS

The Importance of Agriculture.—Land, as we have shown, is a fundamental factor in man's well-being. It follows that agriculture, the industry most closely associated with land, holds a foremost place in satisfying man's wants. Without farming, civilized men would perish. Mining, fishing, manufacturing, and transportation might be destroyed, but if farming were retained men could survive.

In the United States, farmers have an investment of 51 billion dollars, a sum greater than capitalists have put into all of our factories, mines, or railroads together. The value of the American farm products for one year would redeem all of the Liberty loans; the value of the eggs and poultry products for three months alone would pay for the year's interest on these loans. Almost a third of all the people in the United States live on farms, while one-fifth more live in towns with less than 2,500 population.

The relation of the farms to the food supply affects every person in the country, and the price of farm products is felt in every industry. Since 70% of all the income from manufacturing goes to labor in wages, and inasmuch as labor spends 40% of its wages on food, it is easy to see why the price of farm stuff influences factory managers. If the price of food advances materially, managers must increase wages. Moreover three-fourths of the raw materials which factories use originate on farms. Hence the relationship of farms to factories is particularly intimate.

It is only by visualizing the industry limned by such facts

as these that one can understand the full meaning of the phrase —“The primary industry is agriculture.”

Supply-Crop Agriculture.—Inasmuch as agriculture is the primary industry, it was possible for the first American colonists to gain their entire livelihood from it. Their doing so was not only forced upon them by their environment but was also in accordance with their traditions. According to Pliny who voiced the tradition of Roman agriculture, the foremost maxim of farming was, “Buy nothing you can produce.” The manorial system of the Middle Ages conformed strictly to this precept.

Just before emigration to America started, a few English farmers had begun to experiment in raising sheep and producing wool, not for family consumption but for selling in a commercial market. The Puritans, however, did not come from eastern England where this commercial farming was in vogue, but hailed from the southern counties of Wilts and Dorset where supply crops alone were raised. One objection the Puritans raised to life in Holland was that agriculture was commercialized, and trades specialized. Upon arrival in New England, the Puritans found that their predilection for supply-crop farming was confirmed by their pioneer position.

Unfitness of Colonial New England for Money-Crop Agriculture.—To raise special crops to sell for money with which all the needs of life may be satisfied, requires a crop for which there is a ready market and in whose growth a district has peculiarly favorable advantages. There was no such crop in New England. Everything the Puritans raised could be grown more advantageously in England itself. Corn, the only exception, had no market in England and even now is there considered to be unfit for human food. Potash was sold from interior American farms and sent to Europe, but this trade was too small, too arduous, and too wasteful of effort

to form the basis of a money agriculture. When New England did discover a money crop, it was in fish gathered from the sea, and not plants or animals raised on the soil.

Had there been a money crop in New England, it is doubtful if the Puritans could have commercialized it, on account of the difficulties of transportation. Most of the streams of New England were too small and too rapid to warrant their use as avenues of business. Roads and turnpikes were slow in coming to the aid of traffic, and canals were yet later delayed. The scant means of communication at the colonists' disposal were made dangerous by the frequency of accident or adventures with highwaymen. Upon the sea, storms were more of a hazard then than now, and there was almost constant loss by reason of pirates and privateers.

All of these things so added to the cost of carriage that farm products could travel scarcely a hundred miles before their value was consumed in freight charges. Local famines in particular products were therefore not uncommon, even though plenty prevailed less than 100 miles distant.

The New England Supply Crops.—No way being provided by which the New Englanders could specialize and turn into money particular crops, each farmer was compelled to adopt supply-crop agriculture; that is, he was forced to raise everything he consumed. In the fields he planted corn, wheat, rye, barley, buckwheat, and potatoes; on the meadows he raised cattle and horses; on the hillside he turned loose his twenty sheep, or in some sections pastured them on the town green watched over by the town shepherd; near the barn he had a pigsty; while close to the house there was a garden which, besides flowers, grew pepper, caraway seeds, and sage, or flax, vegetables and berries. Beehives near the garden furnished honey as a substitute for sugar, although some farmers made sugar from maple sap. A chicken yard, a small orchard, and one or more wood-lots completed the farmer's equipment.

His house was a factory, where by day, in addition to housekeeping and the preparation of meals, yarn was spun, cloth woven, shoes made, soap, candles, butter and cheese manufactured, or clothing cut and sewed. In odd moments the family also fashioned household implements, utensils, furniture, necessities, and comforts. Likewise farming implements and building materials were produced on the spot. In the evening, in order to prevent Satan from finding employment for their idle hands, the family gathered about the hearth to heat and hammer out hand-wrought nails and tacks. These pioneers bought nothing because they produced everything.

Supply-Crop Agriculture Usual on Frontiers.—This sort of farming followed the pioneer from Plymouth Rock to Council Bluff. Supply-crop agriculture was no more peculiar to the Puritans than it was to the "Hoosiers" of Indiana, the "Suckers" of Illinois, or the "Badgers" of Wisconsin. It was equally familiar in New York, Ohio, Michigan, and Missouri. In general, east of the Great Plains each household for a time at least supplied its own wants.

Southern Money Crops.—But to this rule there was one great outstanding exception. The south—Maryland, Virginia, the Carolinas, and Georgia—did not conform to it. After experimenting unprofitably with the production of silk and wine, the south at length discovered crops that Europe wanted. Maryland and Virginia pinned their faith to tobacco culture, while the more southern colonies found prosperity in indigo and rice. At the close of the colonial period, cotton became the great source of all southern wealth. Almost from the first, then, the south could promote money-crop agriculture. In Virginia the crop itself, tobacco, was actually money, and even the ministers' salaries were paid in it.

Not only was the south fortunate in developing special crops that could be sold, but nature provided adequate trans-

portation. Chesapeake Bay with its innumerable inlets afforded a protected inland waterway that permitted each plantation to be its own ocean terminal. Each man's own dooryard was connected directly with London. Further south, Albemarle or Pamlico Sounds with their river arms performed a similar accommodation, while South Carolina and Georgia were served by wide sluggish rivers of which the Savannah was the queen.

With no hindrances to transportation, the south could develop its money crop system of agriculture. Tobacco (or indigo and rice) paid for everything the southerners used whether it was mustard seed or four-poster beds, handkerchiefs, or ball gowns. Easy living, civilized comforts, and polished manners among southerners were in marked contrast with the ceaseless labor, crude facilities, and rough speech or action of pioneers elsewhere in America. A money crop, slave labor, and adequate transportation made the contrast possible.

Money-Crop Agriculture.—But frontier conditions have gone from the United States and no modern American pioneer would be forced to supply all his own wants from his own resources. Every farmer can, if he wishes, specialize upon particularly profitable products. A modern Pliny would voice the maxim, "Produce nothing that you can buy more cheaply." Net profit is the key to money-crop farming. With the new system has come emancipation from unnecessary toil, and the possibility of gaining more than a mere livelihood from the farm.

Specialization is both possible and profitable because some places are better suited to certain crops than other regions. Louisiana has the semi-tropical climate required to grow sugar-cane. Northern Maine possesses the cool days and nights that produce the best potatoes. New Jersey's sand yields excellent tomatoes, while Pennsylvania's clay soil nourishes succulent grass upon which large herds of cows subsist. On the other hand, sugar-cane cannot be matured in Maine; potatoes dete-

riorate in Louisiana, ordinary grass wilts in New Jersey's sand, and tomatoes will not grow well in Pennsylvania without expensive care.

When a farmer confines his attention to sugar-cane, potatoes, tomatoes, cows, or any other farm product, he becomes most skilful in its production. This greatest skill involves thorough knowledge of his product and also ability to sell it to advantage. Furthermore, there are differences in men; some by personality, inclination, or training are fitted to raise bull calves; others are most successful in the culture of sweet peas.

As a result of all of these considerations, specialized farming permits greater ease, greater personal satisfaction, and greater profit than the old-fashioned supply-crop type of agriculture.

Money-Crop Agriculture: Influence of Transportation.—

The transition from supply crops to money crops in the United States was facilitated by improvements in transportation. Turnpikes built by private companies and paid for by toll charges were the first relief granted to otherwise isolated communities.

What these pikes meant to agriculture is well illustrated by their effect on prices of the products and of the land itself. Before roads were constructed, farmers cultivated just enough land to support themselves, and any surplus crops were either burned for fuel or plowed under for fertilizer. When roads opened the way to markets, cities were more plentifully supplied with food and so prices dropped. On the other hand, prices at the farm rose because there was an outlet for surplus product. Indeed the original small self-sufficient farms were soon drained of surplus, so that farmers were induced to plant greater areas and to acquire more land for tillage. Since land was in greater demand in order to extend the farms, it rose in value. Land bought originally for \$1.25 per acre, advanced to \$20 per acre.

Thus both the eastern consumer and the western producer gained by the transportation which permitted the potential surplus of one region to flow to the potential dearth in another.

Water Transportation.—Turnpike construction was preceded, accompanied, or followed by the digging of canals. River and lake traffic was greatly increased by the invention and improvement of the steamboat, and this increase was furthered by connecting the natural waterways by means of canals. The most famous and important of all the canals was the Erie. In 1824 corn was 10 cents a bushel and wheat 30 cents in Ohio. At the same time corn sold in New York for 40 cents and wheat for \$1.20. After the Erie Canal was opened, Ohio corn on the farm fetched 20 cents per bushel, while the New York price fell to 30 cents. The Erie waterway provided the greatest stimulus, therefore, to the west to specialize in grains or animal products. At the same time the force of the competition of these western farms compelled eastern farmers to give up supply-crop agriculture and either specialize in dairying, fruit culture, and market gardening or altogether abandon their farms. These facts are illuminated by the following table:

	Bushels per Capita	
	1850	1860
New England:		
Wheat.....	4.65	.345
Rye.....	.539	.455
Corn.....	3.73	2.92
West:		
Wheat.....	7.22	10.00
Rye.....	.196	.574
Corn.....	44.	45.86

The new farm areas of the middle west avidly seized upon all transportation improvements. As a result of these improved outlets to market, the Mohawk Valley became the wheat belt, with Rochester or Oswego playing the rôle now carried by flour-milling Minneapolis. Later Kentucky, Tennessee, southern Ohio, Indiana, and Illinois wrested the wheat business from

the Empire State; eventually the wheat specialists found their best opportunities in Kansas, Nebraska, or the Dakotas. Water transportation fastened corn and hogs upon the middle west, and raised Cincinnati to the leading place as a wholesale distributor of agricultural products and as a packing center. It was given the slangy nickname of "Porkopolis." For years Cincinnati was the largest inland city, her prosperity largely dependent upon the water-borne farm products in which her back country specialized. Indeed it was confidently predicted in 1840 that Cincinnati would soon be the largest city in the country and perhaps in the world.

Railroad Transportation.—But railroads wrested the water-wreathed crown from Cincinnati, and placed the symbols of victory upon rail-girded Chicago. Farmers were even more eager for freight trains than they had been for Conestoga wagons or boats. The typical farming districts have been criss-crossed with railways until, for example, the middle west has the densest railway net of any part of the United States. In 1865 it cost the equivalent of one month of a mechanic's wages to move one ton of foodstuff from the west to the Atlantic seaboard, but now a whole year's supply of meat for one man can be brought east for the equivalent of one day's wages.

Railroads, like canals, have secured to the producer or middleman nearly the Atlantic market price. Before railroads and canals entered the west, wheat sold on the farm for as low as 30 cents a bushel and corn for 10 cents. Since railroads have been built farmers have secured as high as \$2.20 per bushel for wheat and close to a dollar for corn. But prices quoted in Cincinnati before and after railroad construction are more directly illuminating.

	1826	1835	1853	1860
Flour, per bbl.....	\$3.00	\$6.00	\$5.50	\$5.60
Corn, per cwt.....	.12	.32	.37	.48
Hogs, per cwt.....	2.00	3.12	4.00	6.20
Lard, per lb.....	.005	.008	.085	.11

Railroads have permitted the utmost specialization in farming. Without railways the commercial apple orchards of Washington, Oregon, and Idaho would be impossible; likewise, the orange groves of Florida and California, the vineyards of New York's lake-shore, the peanut farms of North Carolina, the dairies of Wisconsin or Vermont, and the potato farms of Maine or Idaho, would be utterly unprofitable without railroad connections.

Money-Crop Agriculture: Lack of Labor.—Adequate transportation, although vital in the development of money-crop agriculture, is not the only factor that has made easy this type of farming. Emphasis must also be placed upon the rôle of machinery. The need for farm machinery has always been heightened in the United States by the smallness of our population in comparison with the size of our land. The following table illustrates this point.

POPULATION PER SQUARE MILE—UNITED STATES

1790.....	4.5	1840.....	9.7	1890.....	21.2
1800.....	6.1	1850.....	7.9	1900.....	25.6
1810.....	4.3	1860.....	10.6	1910.....	30.9
1820.....	5.5	1870.....	13.0	1920.....	35.5
1830.....	7.3	1880.....	16.9		

The United States as a whole has always been relatively empty. This means that labor has always been relatively scarce. But the situation in regard to the lack of labor has been more striking in the typical farming states than in those where other industries play an important part. The table on page 47 helps to make clear this statement.

The Introduction of Machinery.—Wherever there has been commerce, manufacturing, or mining, men have been withdrawn or withheld from farming. This has meant that the farmer has had to produce more food to make up the deficit of those who no longer have fed themselves. Before the Revolution, each farmer needed only to harvest enough food

POPULATION PER SQUARE MILE—SELECTED STATES

	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920
New England:														
Vermont*	9.4	16.9	23.9	25.9	30.8	32.	34.4	34.5	36.2	36.4	36.4	37.7	39.	38.6
Massachusetts....	47.1	52.6	58.7	65.1	75.9	91.7	123.7	153.1	181.3	221.8	278.5	349.	418.8	479.2
Middle Atlantic:														
Pennsylvania*	9.7	13.4	18.1	23.4	30.1	38.5	51.6	64.8	78.6	95.5	117.3	140.	170.	194.5
New York.....	7.1	12.4	20.1	28.8	40.3	51.	65.	81.4	92.	106.7	126.	152.	191.	217.9
South Atlantic:														
Florida*	.....	.....	.....	.....	0.6	1.0	1.6	2.6	3.4	4.9	7.1	9.6	13.7	17.7
North Carolina....	8.1	9.8	11.4	13.1	15.1	15.5	17.8	20.4	22.	28.7	33.2	38.9	45.3	52.5
Middle West:														
Iowa*	.....	.....	.....	.....	.....	0.2	3.5	12.1	21.5	29.2	34.4	40.2	40.	43.2
Illinois.....	.....	0.1	1.0	2.8	8.5	.....	15.2	30.6	45.4	55.	68.3	86.1	100.6	115.7

* In each of the four groups the state starred is the more typically agricultural.

to feed his own family, but by 1880 he was forced to supply the food for part of another family as well, and now in 1922 he has to feed two families in addition to his own.

With this increasing pressure put upon him, our farmer has had to make his own and his helpers' labor produce more in amount of farm stuff sent to market. He could not gain this result by hiring more labor because, as we have shown, there was little labor available. Hence the farmer has had to multiply his effort by means of machinery. In 1820 the work of three horses, a man, and a boy hardly sufficed to thresh 40 bushels of wheat per day, but our modern machines thresh thousands of bushels in the same time. In like manner an expert cradler could reap 4 acres of wheat per day, whereas our reaping machines cut two and a half times as many acres per hour.

Along with the machines and men used in operating the machines, horse labor has supplanted that of men. In 1880 there were 1.17 horses per male laborer engaged in farming, while in 1900 there were 2.3 horses for every man.

Inventors have bent their energies to improve every part of farm equipment, and have introduced new devices that had never had a counterpart. The first American plow—used by the Indians—was the shoulder blade of an elk or moose. The colonists used heavy, clumsy, wooden plows. These were followed by plows of cast iron and eventually of steel, despite the fact that conservative farmers at first claimed that iron plows poisoned the soil and promoted weed growth. The inventor Charles Newbold of New Jersey in 1797 spent \$30,000 in trying to get farmers to use his first iron plow.

Today whole gangs of plows are hitched together and drawn by a number of horses or by a tractor. Plows too have been specialized for each type of work and every variety of soil. Similarly the sickle has been replaced by the cradle, and this in turn by the reaping machine. The latter has undergone constant improvement or refinements in order to increase

its usefulness. Seeders, cultivators, rakes, hay tedders and loaders, tractors, cream separators, corn huskers and cutters, and many other devices to lighten labor and expand its productivity have been introduced.

The seventh patent issued in the United States was for a threshing machine. In 1830 there were 34 patents issued for farm devices; in 1831 there were 38 such patents. In 1863, under the stimulus of the Civil War, no less than 502 farm machinery patents were issued, and thereafter for a quarter of a century about 100 patents a year were taken out on farm implements and machines.

The gas engine and the home electric outfit have produced amazing results in the application of power to farm work. The introduction of electric lighting has greatly increased the farm demand for wall paper, rugs, and furniture; while pumps operated by gas engines or electricity have permitted the installation of bathrooms, a fact attested by the sales records of soap manufacturers. The farm at last is becoming attractive.

Influence of Machinery upon Money-Crop Agriculture.

—There is a general rule in regard to the use of machinery whether it be in factory or on the farm; the employment of machines is most economic where the machines can be used most intensively. A man with a few acres of apple trees cannot afford a spraying machine, neither can a man with 40 acres of wheat justify the expense of a threshing machine. But a man whose principal business is the growing of apples—or wheat—can make such extensive use of the appropriate machinery, either in the number of acres to be covered or the number of weeks of use of the machines, that he is fully warranted in the necessary money outlay. Furthermore, where a number of farmers in a given region all specialize in the same crops, they can purchase by co-operative methods expensive machinery or that for which they have only a temporary use. This is a familiar practice in regard to threshing machines and

heavy tractors. There is a close connection, therefore, between the development or use of farm machinery and money-crop agriculture.

Money-Crop Agriculture: The Farmer Scientist.—The pressure for getting the greatest return for a given outlay of land, labor, capital, and management effort that has led to the use of machinery has also been potent in changing the farmer from a conservative follower of custom—planting in the dark of the moon—to a daring experimental scientist. The modern money-crop farmer must know something about geology, physics, chemistry, biology, botany, zoology, and climatology.

The Farmer Geologist.—As a geologist, the farmer must know and make use of his knowledge of the forces that change rock into soil, and how different rocks produce varied soils each fit or unfit for particular crops. He must make the action of frost, wind, or water upon rock and soil work for and not against his interests.

The Farmer Physicist and Chemist.—As a physicist, the farmer must know all the virtues and defects of soil texture, ranging from coarse gravel to finely divided loam; because plants have a strong affinity or repulsion for porosity or imperviousness of soil. As a chemist, the farmer must understand about the chemical plant-foods contained in the soil, and how to preserve and balance the beneficial, or proscribe and banish the harmful. Our agriculturists now spend 70 million dollars a year for fertilizers, most of which sum could be saved by a proper application of the laws of soil chemistry.

The Farmer Bacteriologist.—As a biologist, the country scientists must employ soil bacteriology. There are so many minute organisms in the soil that a single gram has been known to contain 1,600 million of them. Many bacteria work for

man and unlock for him nature's stores. Of this class are the bacteria that attach themselves to the roots of such plants as peas, beans, or clover. These organisms take nitrogen from the air and secrete it in the soil, where it becomes a most important element in plant foods.

But bacteria may also be harmful, as when they make soils "sour," and such tiny enemies man must learn to combat. Many of the pests that beset farmers are of bacterial origin. The harm they do amounts to millions of dollars. Bacterial infections yearly destroy 5 million dollars worth of sugar-cane or sugar-beets. Bacteria also cause a loss of 175 million dollars per year in the animal industries, and 200 million dollars annually upon cereal farms.

The Farmer Botanist.—As a biologist, too, a farmer must know botany. Plant selection and breeding have a marked bearing upon the net profits of farming. By selection man may seek and choose plants that are best adapted to particular environment. Milo, maize, and kafir corn have permitted man to push back the edge of the desert in Kansas, Nebraska, Oklahoma, and Texas. Wheat that resists frost and matures quickly has advanced the wheat belt from 55° north latitude to 64°, the location of Dawson.

By plant breeding our farmer scientist has increased our normal wheat yield of 12-15 bushels per acre to 47 bushels. When it is realized that an increase of 3 bushels per acre would make a favorable difference of 100 million dollars to our farmers, one may see how important plant breeding is.

Corn has a multitude of uses each requiring a different kind of plant. For corn oil, the oil content must be increased; for alcohol the starch must be augmented; for human food the glucose must be raised; for cattle or hens the cell structure must be modified. Breeding and growing corn for a particular purpose, therefore, becomes most profitable. If we could raise the average yield of corn per acre by as little as 10 bushels—

and southern negro boys in their own gardens have doubled this increase over the average—we should add 400 million dollars to our national wealth.

On the negative side, farmer botanists do well to study the life habits of weeds. Weeds are robbers, taking nutriment, water, and labor away from the plants that yield the farm income. Weeds, too, are peculiarly persistent and resistant, so that farmers must study them to discover their weakness whereby they may be destroyed. Legislatures have thought it not beneath their dignity to pass laws concerning the eradication or limitation of weeds. As a botanist a farmer has a large opportunity to improve his own income and advance the national welfare.

The Farmer Zoologist.—Zoology, too, is a branch of biology in which farmers find that wealth flows from knowledge. Animal breeding is similar to plant breeding, while animal feeding takes into consideration physiology, chemistry, and bacteriology. Animal breeding has produced such diverse types as the beef steer or dairy cow, the wool or mutton sheep, and the race horse or the farm work-animal. Biologists interest themselves also in the multitudinous insect life of which there are some millions of species. It is claimed that insects destroy a billion dollars worth of farm stuff per year. The desolation that follows hosts of locusts, grasshoppers, and flies is well known.

Such insects the farmer must fight, but he has learned that other insects can be made to work for him. Thus a tiny scarlet fly saved hundreds of California orchards that were dying of a cotton-cushiony scale. The fly ate the scale. Another almost invisible fly was imported from Spain to save some of our western apple orchards from the ravages of the coddling moth whose eggs the fly devoured. To an insect imported from the Mediterranean whose job is to mix a certain wild fig pollen with the cultivated, we owe the success of our fig orchards in

the United States. The similar work of bees is a commonplace. Insects, then, have a prominent place upon the farmer's program of things about which to learn.

The Farmer Business Man.—The modern farmer is called upon to combine with his scientific activities, those also of a business man. The business mind and the scientific mind are seldom found in one head, but just to the degree that a farmer blends the two types, to that degree he succeeds as a farmer. The business man watches markets both for raw materials and products; he gauges the net profits on processes; he combines land, labor, and capital in just the right proportions to yield the largest net income; he is the boss of machinery and men. A farmer must do all these things, too. The farmer as a business man keeps his mind fixed always on net profits, and this becomes the guide by which he makes all his decisions.

It was the business farmer who hailed the Burbank tester by which the butter-fat content of milk was easily and accurately ascertained. This tester put the milk business on the basis of quality and not quantity. In dairying, again, it is the business farmer who records the productivity of each cow, and who quickly rids the herd of all "cow-boarders."

It is the business farmer who has potatoes to sell when potatoes are scarce, and none when they are a drug on the market. It is the business farmer who buys lime to "sweeten" his soil when lime is lowest in price. When farmers compete for land, it is the business farmer who gets it, for he can pay a high price or a high rent and yet make a large net profit, whereas the ordinary farmer would fail to make even reasonable wages for his toil. We find the best men on the best land, and the best man is one who is a business man as well as a farmer.

It is business ability that tells a farmer how far to go in specialization and how much to indulge in mixed farming, how to combine crops or products that do not compete for time and

attention but by their interrelation keep the farm constantly occupied in productive work.

Business Problems of a Farm.—The farmer as a business man has much harder business problems to solve than the manufacturer. As a rule makers of the same articles work under similar conditions and can establish rules, but farmers cannot do so because of the great varieties of soil and climate. A manufacturer can block out each day's work for months in advance, but not so a farmer for his work is changed daily by the weather.

A manufacturer can determine costs accurately; but look for a minute at the complexities of farm bookkeeping. Is the cost of manure to be charged to the first crop after its use or for the two or three following ones? Where two crops—such as grain in an orchard—are grown in the same soil and the ground must be cultivated for the one, how much, if any, of the cost of cultivation should be charged to the other crop? How shall a farmer allow for increases of land value? What cash allowance shall he make for waste materials utilized?

These are merely suggestions of the intricacy of discovering real farm costs. Would the majority of other business men meet them with the same success as the majority of farmers? All told, the farmer as a business man has a most exacting career.

Money-Crop Agriculture: Farm Aids.—No one would expect a farmer to be and do all these things unaided and dependent solely upon his native genius. The farmer's work is so important to the nation that society in its organized form of government—national, state, county, and local—comes to the assistance of the farmer.

Education.—In many communities, the potential farmer, in boyhood, goes to a district school where the curriculum is

designed to be of the utmost benefit in his future life-job. The old-fashioned, one-room, red schoolhouse is disappearing; in its place is being substituted the consolidated school, a large well-built, well-equipped, adequately staffed structure, to which, in many communities, the youngsters ride daily in community buses. In addition to the "three R's," the pupils are instructed in the theory, explanation, and improvement of the practical details of farm or home management that surround them outside of school hours. Life and teaching co-ordinate.

Such specialized education does not stop with the grade schools but is carried through high schools to the state college of agriculture and domestic arts, or to the state university. The latter not only cares for the full-time undergraduate needs, but also gives special short-term courses for farmers, and conducts correspondence schools, field demonstrations, and co-operative field experiments.

What may be accomplished is illustrated in Wisconsin where by university aid in regard to dairying—one of the state's principal sources of income—the number of cows in the state was increased by 47%, the butter-fat content of the milk by 70%, and the cheese manufactured by 86%.

The Farm Bureau.—The practical farmer, after being well grounded in his trade, becomes a member of a farm bureau through which all sorts of direct assistance is given, particularly upon the business phases of a farmer's job. On the scientific side, county agents in three-fourths of our 2,920 counties visit in person the individual farms and render technical assistance. Banks and railroads sometimes aid in increasing the number of county agents or provide agent specialists. Farmers' societies are as old as the union; the first ones were organized in 1785 in Philadelphia and North Carolina. How beneficial such an organization as the "Grange"—the Patrons of Husbandry—has been needs no mention.

The farmer's women-folk are not neglected in all these efforts to assist agriculture; women agents, corresponding to the county agents already mentioned, visit the farmhouse and demonstrate desirable farm-housekeeping. The farmer's wife, too, participates in the Grange, and his daughter has the same educational advantages as his sons. All of these things together with good roads, "flivvers" and Cadillacs, rural free delivery, telephones, and traveling libraries, remove the rusticity of farming and make it a social business—a scientific vocation.

Drift to Cities.—Once the farmers feared the drift of farm folks to the cities. As a matter of fact, beginning in the census revelations of 1920, we know that slightly more people do actually live in cities than under rural conditions. But farmers no longer fear this trek.

Formerly it was the most energetic son who left the farm for the wider opportunities of the metropolis; today it is more likely to be the ne'er-do-well son who leaves home. With so much improved machinery, the farmer no longer worries greatly over the potential labor shortage brought about by the city drift. And finally, the bigger the cities and the more scattered they become, the greater and handier are the farmer's markets. With larger markets his crops have more value, and this in turn raises the value of his land.

The farm laborer who formerly was driven to the city by the farm's long hours and loneliness, now finds less excuse for going; because farmers are adapting their hours somewhat in accordance with city standards, and the loneliness is alleviated by the family Ford, plus fixed or peripatetic "movies."

The era of actually abandoning farms is on the wane. In 1890 it was possible to buy a New England farm for less than it had originally cost to set up the farm's stone-walls, to say nothing of buildings. In Vermont or New Hampshire farms could then be bought for \$3 an acre. But the passing of free

land, the high price of western land, the craving of many immigrant factory-laborers for land, and the city gentleman's desire for an estate, all have led to the purchase of many New England farms. Abandoned farms are still numerous, but their valuation has increased and their number is decreasing. The drift to the cities, therefore, is being slightly counteracted by a trickle to the farm, while the existing farms show a less toilsome and far pleasanter life.

Land Tenure.—Sociologists, long troubled by the decline in rural population, are now worried over the tendency toward large-scale farm operation accompanied by an increase of tenantry. The proud boast of America has been its offer of a small farm to all takers, and the absence of landlordism or peasantry. We have observed that the farmers of European countries such as France, Holland, and Switzerland, where holdings are small, are the most prosperous and contented. Emigration from these countries has been small, as is demonstrated by the paucity of immigrants we ourselves have received from these sources. We have been proud that we, too, have followed the same policy, for our farms have been small in comparison with our area and population.

The Federal Land Policy.—Our federal government has encouraged small holdings, either by charging a small price per acre or actually giving away the land. In 1785 the charge was one dollar an acre; in 1800 for the Northwest Territory we charged two dollars an acre, but by 1820 we reduced the price to \$1.20 an acre. In 1840 pre-emption rights were granted small holders; a man who lived upon the ground was given prior claim to it, and the payment of \$1.25 an acre for it was made easy by liberal terms. In 1862 the Homestead Act provided that any person could secure 160 acres by simply living upon and developing them for five years.

We could well afford to be generous with land because it

was the common opinion—voiced even by a cabinet officer shortly after the Civil War—that it would take five hundred years to settle all of our public domain. But our liberality resulted in an overwhelming immigration, so that our supply of public lands was well-nigh exhausted within fifty years. Over a million acres were given away in each of the states of Wyoming, Montana, Colorado, Oregon, and Washington; and over 200 million acres were disposed of all told. In 1904, when 2,000 pieces of land were offered for settlement, no less than 106,000 persons made application for them. The demand was 53 times the supply. Under such circumstances land values were bound to rise. Land given away in 1875 now sells in some cases for \$300 an acre.

Large-Scale Farming and Tenantry.—With land now so high priced it is hard for a man with little capital to secure it. As a result men with capital are getting control of ever larger tracts, and then renting the land to tenants. Sociologists are alarmed. They see that small owners do the best quality of work because they have a personal interest in it, and that they are careful not to drain the soil of its fertility because they hope to own it permanently. Besides, there is a personal satisfaction in being your own boss. On the other hand, renters are slipshod in their methods; they work for the greatest immediate gain regardless of soil deterioration; and they often feel a loss of self-respect in being under the dominance of another.

But the sociologists who foresee national danger in the large-scale, rented land farm-movement do not go sufficiently deep below the surface. Large-scale farming is likely to be done by the most capable farmers, just as all large-scale businesses require and get the keenest men. Large-scale farming permits a much greater subdivision of labor than small farms. This is not only more profitable to the owner but more satisfactory to the farm worker, because it simplifies and standardizes his tasks. On large farms machinery can be

purchased in larger proportions and applied more economically by reason of the larger acreage. The owner himself can devote his time more completely to the business of management, and attain a position and profits more comparable to those of a factory manager.

As to tenants, the statistics collected by the census show that most of them are young men who use the tenant system as a means of serving an apprenticeship at the farmer's trade while saving sufficient money to purchase land for themselves. There are few tenants beyond the age of forty, while farm owners are more frequently in age groups beyond the forty-year period. Although tenantry has increased from 25% in 1880, to 37% in 1910, we have not raised a landlord class, for 80% of the landlords own but one farm each. Neither are they absentee landlords, for three-fourths of them live in the same county in which they own farms.

In effect tenantry is a partnership, with the older men furnishing capital and the younger the labor. As soon as the youngsters can put up a little capital they buy a farm and mortgage it for the remainder of the purchase price. These mortgages on the average are paid off in five years, and less than 1% are ever foreclosed. So tenantry is merely a reflection of the passing of free land, and is not creating a class of landlords surrounded by a class of potential peasants.

CHAPTER IV

THE ECONOMICS OF MINING

Origin of Minerals.—Measured by our own short span of life, the earth seems to be fixed and unchanging, but when one considers geologic eras, the earth has been as capricious in form as a fashionable belle. To accomplish the alterations in the earth's figure and structure necessitated tremendous exertions of force, mostly due to cooling, heat, or pressure. Out of these forces our minerals have come. Where the forces operated on living things, or the remains of previous life, the non-metallic minerals were created. On the other hand, the metals arose from the forces themselves.

Distribution of Mineral Deposits: World Distribution.
—Whatever were the forces that produced minerals, they acted most unevenly throughout the world, without conformity to any known basis for distribution. No country has deposits of all the useful minerals and but few of them have many different varieties. The world's economic minerals are peculiarly limited to special places. This statement can be confirmed by even a hasty survey and may be illustrated as follows:

Commercial deposits of nitrates are found only in Chile, of potash in Germany alone, and of manganese and platinum chiefly in Russia, while Ceylon has almost a monopoly of crystalline graphite. Although in common use, such minerals as tin, nickel, sulphur, phosphate, mercury, and sheet mica are extremely localized in their occurrence in the world. Most of the world's petroleum to date has been discovered in the United States, Russia, and Mexico, while the greatest coal deposits are

limited to the United States and Canada, China, Germany, France, Great Britain, and Belgium. Half of the world's copper is in the United States, and three-fourths of the world's zinc is mined in the United States, Germany, and Austria.

If we went through the whole list of useful minerals the same whimsicality of world distribution would be noted. This is not true of any of our other basic materials. Every nation possesses some farm land and agricultural resources, at least a little in the way of forest resources, and fish. Mineral resources alone are unequally distributed, and consequently may be the bases for determining the balance of power between nations.

Position of the United States in World-Mineral Supplies.—Since this is so, it is especially important to set forth our own position in respect to minerals. Of all the nations of the world, the United States alone approaches self-sufficiency in mineral resources. If one analyzed the world situation in regard to the thirty most important minerals, one would discover that the United States was deficient in only seven; namely, chromite, manganese, nickel, nitrates, platinum, potash, and tin. Of these we could, if we were forced, make good our lack in nitrates and potash, and we may get release from our stricture in regard to platinum.

Turning from our dearth to our plenty, and again scrutinizing the list of thirty minerals, we would come upon an astounding fact. Of the thirty the United States is the world's principal producer of thirteen, and stands second in the production of four others. This showing is six to seven times as good as any other nation. Only three other nations—Russia, Austria, and Spain—lead in as many as two minerals. The list is as follows:

Distribution within the United States.—Within the United States some of our minerals are widely dispersed.

Mineral	Leading Nation	World's Output in 1913 %
Coal.....	United States	39%
Petroleum.....	United States	65
Natural gas.....	United States	95
Iron.....	United States	36
Tungsten.....	United States	17
Vanadium.....	Peru	76
Molybdenum.....	United States	38
Manganese.....	Russia	55
Nickel.....	Canada	85
Chromic iron.....	Rhodesia	35
Copper.....	United States	56
Lead.....	United States	34
Zinc.....	United States	37
Gold.....	Transvaal	41
Silver.....	United States	30
Platinum.....	Russia	99
Arsenic.....	United States	16
Antimony.....	China	53
Sheet mica.....	India	59
Pyrite.....	Spain	54
Sulphur.....	Italy	43
Phosphate.....	United States	43
Potash.....	Germany	99
Nitrate.....	Chile	99
Bauxite.....	France	58
Graphite.....	Austria	39
Magnesite.....	Austria	74
Tin.....	Malay States	40
Salt.....	United States	20
Mercury.....	Spain	31

For example, coal is mined in 30 out of 48 states. Petroleum, too, is gathered from seven great fields as far apart as Pennsylvania, California, and Texas. Building stones, clay, and common salt are also obtained from separated divergent regions. But for the most part our minerals are localized west of the Mississippi River and largely in the neighborhood of the Rocky Mountains. A similar feature is marked in Canada and Mexico; and in South America, the Andes region contains most of the mining.

In the United States there are only two copper-producing districts in the east, one in Michigan, the other in Tennessee. Northern Minnesota supplies 80% of our iron, although small deposits of iron are scattered in many other states. The only important mineral produced in the South Atlantic states is phosphate rock. In short, for gold, silver, lead, and many

other major and minor minerals we must look to our west. Mining and everything connected with it are most typical, therefore, in our western states. From these facts in regard to world and national distribution of minerals many important results follow.

Political Consequences of Mineral Distribution.—It has been said that all international wars have been at bottom a struggle for possession or control of minerals. Of course such a generalization could not withstand the acid test of analysis, but it contains sufficient truth to warrant consideration.

We know that the Spanish conquest of Latin America was actuated by a greed for gold and silver, and that Spain's temporary world dominance was sustained by the precious metals she wrung from her dependencies. During the last two hundred years the nations of Europe have searched the earth for colonies yielding mineral stores, and the competitive colonial interests have been a constant international irritation. In the background of the Boer War was Britain's desire for control of South African minerals. German World War strategy in France, Belgium, and Roumania was clearly influenced by the desire for coal, iron, and petroleum. The settlements imposed by the Allies in the peace treaty frankly recognize the strategy of mineral ownership, especially in Lorraine, the Saar, and Upper Silesia.

Foreign Ownership or Control of Minerals.—Actual war and conquest are not always necessary in order that a needy nation may secure minerals for itself. Peaceful penetration by means of capital investment or control of selling agencies may produce the desired security.

United States capital—largely in the hands of the Standard Oil Company—dominates the petroleum industry of the whole western hemisphere, while British or British-Dutch interests

are supreme in the eastern hemisphere, principally through the Anglo-Persian Oil Company and the Royal Dutch-Shell Syndicate. England and the United States, through their private citizens, own the greatest of the South American iron fields, while Japan controls the reserves of China, Korea, and Manchuria. Before the World War, Germany exercised control over one-third of the iron and steel business of France, and, despite the political cession of Lorraine, Germany is likely to retain an economic interest there. Germany, too, as one of the largest consumers of copper secured a considerable influence in the American copper business by the establishment of selling agencies affiliated with the German Metal Combine. The three principal German selling companies in the United States, however, were Americanized during the World War. As regards zinc, the German commercial interests more nearly dominated the world market than in any other mineral. In recent years Japan has extended her control of zinc beyond her own borders into Siberia and China.

Similar efforts have been made by the leading nations to grasp the world's resources of nearly every mineral. Although most such attempts are legitimate business enterprises, they contain the seeds of international conflict.

* *Sum* Commercial Results of World-Mineral Distribution.—


Inasmuch as all modern nations have need for a variety of minerals, and whereas those minerals are unequally distributed among the nations, international commerce arises as a matter of necessity. How much commerce is concerned with minerals is little appreciated.

For the United States $33\frac{1}{3}\%$ of the value of our foreign trade lies in minerals; and if we considered tonnage rather than value the percentage would be twice as high. Mineral commodities made up 28% of the value of Germany's commerce and 22% of Russia's just before the World War.

Great Britain normally exports 25% of her production of

coal, an amount that constitutes 70% of the world's sea-borne coal. Her supremacy in this traffic is partly due to the fact that none of her mines are more than 20 miles from the coast, whereas Germany's mines are from 118 to 168 miles from tidewater, and our own 150 to 375 miles from tidewater. Great Britain, too, owned 40% of the world's shipping and used this advantage to enhance her coal trade. Although our annual output of coal constitutes 40% of the world's production, only 4% of it goes into water-borne foreign trade. By rail, however, we ship 8% of our mined coal to Canada.

Not only is the distance from the sea a handicap to our foreign trade in coal, but also our complete lack of organization to handle such commerce either in the coal industry itself or in related shipping. On the other hand, we have the world's record for commerce in petroleum; we ship abroad two-thirds of our kerosene, one-half of our lubricants, one-fourth of our fuel oil, and one-sixth of our gasoline.

 **Minerals in American Domestic Commerce.**—Within the United States the localization of minerals is the cause for a goodly proportion of our freight transportation. Leaving out of consideration the enormous iron and coal traffic upon the Great Lakes, or the river, canal, and coastwise shipping of coal and of building materials, and confining attention to the minerals carried by railroads, we come upon surprising facts in the relationship of the mineral traffic to the total railroad freight business.

The normal balance in freight transportation—and the situation yielding the largest net profit to the railroads—occurs when of every 100 tons of originating freight, 56 tons are unmanufactured mineral products, and the remaining 44 are foodstuffs, manufactured products, and all other commodities carried by railroads. Coal generally constitutes 35 of the total 56 tons of mineral products. Of the 35 tons of coal the railroads themselves are the customers for twelve. The railroads

carry daily as much anthracite and petroleum products as they do foodstuffs; while bituminous coal is the largest single item of railroad freight.

The localization of mineral deposits together with widespread demand for them forces the railroads of the United States to transport 4 million tons of unmanufactured minerals every day. Except for coal whose average journey is 150 miles, the western production and eastern consumption of minerals imposes a 1,500-mile trip upon most of our minerals.

Influence of Mineral Distribution on Exploration and Settlement.—Ever since the Argonauts set out in search for gold, men's greed or need has impelled them to explore the world's surface for signs of minerals. Many hitherto unknown places have thus been brought to knowledge, while oftentimes the prospector has been followed by settlers. The Spanish quests led to the opening of the islands of the Caribbean Sea, the mainlands of Central and South America, and Mexico. Expeditions from the latter country opened California, Arizona, New Mexico, and Texas, oftentimes compelling travel for hundreds of miles across unknown deserts.

In a similar way Australia, South Africa, western Canada, and Alaska were brought to the world's attention. In all of these cases settlement succeeded prospecting, and colonies or states were added to the nations whose citizens had the hardihood to venture into strange territories. California, Nevada, and Colorado, were added to our own list of states because settlement pressed on the heels of lust for minerals.

Gold and petroleum have been the most frequent lures to new places but all of the minerals have contributed their share of enticement to new, unfrequented regions. Much of the present commercial control of minerals lying in foreign lands is based upon prior discovery followed by concessions, exploitation, and settlement.

Influence of Mineral Distribution on Cost of Mining.—

All mining is much alike regardless of the minerals involved. The methods used for getting diamonds from Kimberley mines of South Africa do not differ materially from those employed in securing phosphate rock in Florida, while the methods of mining brick clay at New Haven, Connecticut, copper at Bingham, Utah, iron at Mesaba, Minnesota, or anthracite coal at Hazelton, Pennsylvania, resemble each other far more than they differ.

Nevertheless, the marked disparity in the distribution of minerals, even in minerals of the same kind, creates a wide divergence in the cost of mining in different places. Thus Lake Superior copper has been mined for less than 8 cents a pound, whereas in Arizona it has cost over 12 cents. Gold ore has been mined, treated, and marketed from the Treadwell Mine in Alaska for as little as \$1.48 a ton, while at Camp Bird, Colorado, the cost has run as high as \$12.50. All minerals show similar variations in cost from place to place.

The reasons for such wide divergence in costs are of two general characters—the influences of conditions outside the mine itself, and the influence of factors within the mine.

External Variants of Cost.—Of the external variants, the costs of labor and of supplies are the most important. Since labor usually represents 60% of the total cost of mining and supplies stand for 20%, it is easy to comprehend why differences in the rates of wages, or in the availability and hence price of supplies, might account for considerable ranges in the cost of the mineral mined. Coal mining in the United States alone, and in places not far apart, must face such differences in respect to labor and supplies. Compare for example the mines within the city limits of Springfield, Illinois, with the isolated, hill-girt mines of Mingo County, West Virginia.

The position of mines, too, causes discrepancies in costs. For example, the Camp Bird gold mine in Colorado is 11,200

feet above sea level among steep, snow covered mountains. Snowslides have twice destroyed the external buildings about the mine and held up operations for six months. All supplies are brought to the camp by wagon over a rough mountain road from a railroad station at Ouray several miles away. On the other hand, the gold mines of California, 10 to 20 miles north and east of the city of Sacramento, are in a wide valley, settled, and with ample railroad facilities.

Isolated mines, furthermore, are overburdened with excessive charges for getting their output to mills, smelters, or markets, which of course adds to their costs. In some gold mines and coal mines these transportation charges often exceed the actual cost of mining. The actual problems involved in metallurgical treatment are yet another external variant in costs.

Internal Variants of Cost.—The internal factors influencing costs are: (1) the size and position of the ore bodies, (2) the relation of the valuable material to the enclosing rock, (3) the hardness of the surrounding rocks, (4) the amount of water in the mine, and (5) the depth of the mine.

Passageways cost about the same whether they are driven through the ore itself—in which circumstance all the work is profitable—or through surrounding rocks, in which case all the work is lost so far as immediate production of valuable output is concerned. A large ore body permits passages to be put through the ore itself. If the ore body dips or is much broken up, the cost of areaways is greatly increased.

Hard surrounding rocks guarantee safe working, while soft rocks necessitate great outlays for timbering. The mines of southeast Missouri require no timbering at all, whereas the copper mines of Arizona must pay, for timber alone, the exorbitant price of 75 cents per ton mined. This timber must be brought all the way from Puget Sound because the aridity of Arizona eliminates local supplies.

Water in a mine is a constant menace and a cost-producing factor. The anthracite coal mines pump more water every day than New York City uses, for whereas the average daily consumption of New York's 5 million people is 660 million gallons of water, the anthracite mines pump 823 million gallons per day. For every ton of household and steam anthracite shipped from the mines, the operators must raise 18 tons of water.

The depth of mines is another internal variant in costs. Deep mines require extra heavy machinery and additional power for hoisting, to say nothing of time lost. The Calumet and Hecla mines, some of them over 5,000 feet deep, have hoisting engines that are in constant use for two hours at each change of shift in merely raising or lowering men. Deep mines, too, suffer extra costs because the excessive heat lessens the vitality of the miners. The Calumet and Hecla, the Anaconda and the United Verde mines are all thus handicapped.

The external causes for cost divergence are almost entirely due to differences in location and hence are directly related to the whimsicality with which ore deposits have been scattered about the world. The internal cost variants may be explained in the same way, but the relationship is not so close inasmuch as the factors may all appear in one locality or even in the same mine at different levels.

The Human Cost of Mining.—In considering the economics of mining the cost of human life is often overlooked, yet it is one of the most insistent problems confronting those who are engaged in the business. Except for railroading, mining is the most hazardous enterprise in which a workman can engage. It is three times as dangerous as the occupation of professional soldier or sailor, and four times as dangerous as the job of a policeman or fireman. These facts are brought out by the following table arranged from the 1909 reports of the United States Census.

15 MOST HAZARDOUS OCCUPATIONS—UNITED STATES
CENSUS, 1909

	Death Due to Accidents
1. Steam-railroad employees.....	52.5%
2. Miners.....	39.3
3. Lumbermen.....	27.8
4. Sailors (merchant).....	17.0
5. Engineers and surveyors.....	15.0
6. Iron and steel workers.....	16.0
7. Soldiers and sailors.....	12.9
8. Engineers and firemen (not railroad).....	12.9
9. Stock-raisers.....	11.2
10. Painters.....	10.7
11. Plumbers.....	10.5
12. Laborers.....	9.9
13. Policemen and firemen.....	9.8
14. Liverymen.....	9.8
15. Carpenters.....	9.3

Although all mining is hazardous, the work in metal mines exceeds that of coal mines or quarries. The death rate per 1,000 men employed is 3.91 for metal mines, 3.27 for coal mines, and 1.88 for quarries. Metal mines as a whole are deeper than coal mines, are more often concerned with narrow-pitched veins, and are further removed from centers of population where expert medical aid and hospitals can be enlisted to save life.

Causes of Mining Accidents.—The causes of fatal accidents are common to all types of mining. The principal ones are: (1) falls of roof, (2) gas and dust explosions, (3) premature or delayed explosions of "shots" inserted to blow down the material mined, (4) haulage-way accidents, and (5) ignorance.

It is part of a miner's business to protect weak places in the roof by timbers, but since he is paid generally for the material he sends out of the mine, and not for roofing, the miner prefers to take a chance under a weak roof rather than to spend the time to make it safe. Usually the miner wins on the risk he takes but too often a roof falls and either kills or maims the reckless worker.

Gas and dust explosions occur most frequently in coal

mines because the material worked is inflammable. Winter is the most dangerous season because then the air is dryest.

Haulage accidents are usually due to carelessness or to disregard of orders, but both of these things are hard to detect or prevent until too late. Ignorance of the hazards, and inability to understand or read warnings, constitute another source of fatalities. The increasing proportion of immigrants among the miners and helpers augments troubles due to this cause.

Accidents may be and are reduced by vigorous "safety first" campaigns and by rigorous inspection against dangers. The Pennsylvania law requiring anthracite miners to pass examinations of fitness and experience is an accident preventative. Because of first-aid training many accidents that otherwise would have meant loss of life result only in more or less serious disabilities.

Minerals as Disappearing Resources.—As resources, minerals are in a class by themselves, in that the area of mineral deposits is restricted and fixed and cannot be increased by man's efforts. When the area is reduced by exploitation the shrinkage is permanent and irremediable. When used the deposit is gone forever. Whatever minerals are yet in process of formation will not be available for so many hundred generations that man can disregard them in present or immediate future calculations. Soil when exhausted may be restored to fertility, forests when cut may be replanted, fish when decimated may be artificially propagated and protected until the numbers are re-established—but a worked-out mine is finished. This peculiarity of mineral resources has several important consequences.

Minerals and World Power.—In so far as mineral deposits are determined, their presence within a nation is an inalienable advantage and their lack an unalterable detriment.

Those nations that have not, must appeal by trade to those that have. So commerce is promoted as we have already shown. World power resides with those nations that possess minerals in variety and abundance, for they can use what they have to command what they lack. "To him that hath shall be given, but from him that hath not shall be taken away even that which he hath." Sweden, Cuba, and Brazil have iron but no iron industry because they are wanting in coal. The Malay States have tin but no tin manufacture. On the other hand, the United States with no tin, leads the world in tin manufacture, and Germany with no copper owns 6% of the world's copper output, chiefly in Latin America. Because our own resources in minerals are the greatest in the world, rendering us the most nearly self-sufficient of any nation, the United States—so far as minerals sustain power—has the greatest potentiality of all the countries of the earth.

Reserves Add to Present Prices.—But minerals are not permanent assets either to a nation or a mining operator. The latter, interested in personal gain, shapes his practices in accordance with the evanescence of his material. In order to guarantee the future of his business the operator must buy or control reserves of ore. This practice, of course, requires the sinking of large amounts of capital, and involves the payment of taxes upon idle property. Since business is not philanthropic, the interest on the capital together with the taxes are added to present costs of mining and passed to the consumer in the form of higher prices. For anthracite coal 19 cents a ton is added to the price to cover taxes on reserves.

The Philadelphia and Reading Coal and Iron Company is estimated to hold as reserves 42% of our future anthracite coal supply. The Oliver Mining Company has in reserve 75% of the known iron ore in the Lake Superior region, while the Tennessee Coal, Iron and Railroad Company has vast holdings of coal ore and limestone in Alabama.

Effect of Fixed Supply upon Investment.—The wasting aspect of mineral workings affects mines as investments. If an asset is in liquidation, the more rapidly it is distributed, the greater is the present net value. In order to sell mine stock, therefore, it is of immediate advantage to show wholesale exploitation of reserves, although such a policy would be in defiance of national welfare. The check against this practice is the fact that capital expenditures increase with the shortening of the life of the asset. The balance between the desire for high net value in the present and the need to keep capital expenditures low determines what period of exploitation will yield the greatest and most satisfactory results.

Whatever period is determined, dividends from mining must be higher than from investments in other enterprises. Usually dividends represent net profit on current earnings, and do not contain portions of the original capital investment because this capital is reasonably secure and may be returned in whole whenever desired. But this theory and practice does not apply to mining investments. A mine is less valuable each year it is worked, and when mining is finished the asset in which the original capital was sunk has disappeared. Therefore dividends must be large enough so that during the life of the mine not only interest and profit on the investment are realized but also the principal itself is returned to the owner in full.

Wastes in Mining.—With ultimate exhaustion of his property confronting a mine owner or operator, and with a high dividend rate required, one would suppose that mining would be conducted with the utmost care to save all wastage. However, this is not the case. Sometimes the possibility of exhaustion is disregarded, because the known reserves are so large. In others the ore bodies being worked are so rich and profits so large that the potentiality of greater profits with greater care is held in contempt or ignored. Sometimes care-

ful mining costs more than the results justify, so that it is consciously avoided as bad business practice.

As a result there never has been a mine from which all the available ore was extracted. Some has been wasted by mining thick seams under thin ones, so that the thin veins caved in and were lost. As much as 50% of the zinc in southwest Missouri may have been lost in this way, and certainly large amounts of Lake Superior iron have suffered this fate. Ores in the mine occasionally get mixed with sand or rock and are left because they are too low grade to hoist to the surface. Careless extraction especially near the surface has often resulted in the caving of the overburden, thus destroying much valuable ore. Where ores are sorted, some good material is always lost through ignorance or heedlessness. Ore is left in pillars to support the roof, and never is all of this ore re-mined. If worked-out openings are filled, good ore is often caught and dumped beyond recovery.

Mining losses, as a whole, range from 5% to 30% of the developed ore, and in the anthracite mines two tons of coal have been left in the ground for every ton taken out. If ores such as copper, zinc, or lead require treatment after mining, another loss, sometimes as high as 40%, is sustained. Finally, the wastage due to consumers' carelessness is incalculable. As a result of all the foregoing factors, the ephemeral nature of minerals is disregarded and the wastes total appalling amounts.

CHAPTER V

THE PRINCIPAL MINERAL INDUSTRIES

Importance of Coal.—Coal is the most valuable single mineral in the world; yet North America is the only continent having coal resources of the first magnitude. The United States alone has nearly half of the world's reserves of coal and produces about 40% of the coal mined yearly. Nearly all other mining, almost all mechanical transportation, most manufacturing, and most domestic heating requirements are dependent upon coal.

Bituminous Coal Industry of the United States.—A total area of about 500,000 square miles in the United States contains an underlay of soft coal, and thirty of our forty-eight states contain workable coal deposits. Most of the production, however—75%—comes from Pennsylvania, West Virginia, Illinois, and Ohio. The coal operators number upwards of 5,000, their mines ranging in output from a few tons to 600,000 tons per day. The small producer, however, predominates, as the average daily output is 405 tons, and three-fifths of all operators employ only from one to twenty men. These facts have important economic consequences.

Overproduction of Soft Coal.—In the first place we are oversupplied with mines. The mines must be operated regardless of the market in order either to defray overhead charges or to pay taxes. The result—if all the mines operate full time—is a yearly production of 250 million tons too much coal. The glutted market makes it impossible to work all the mines

all the time. The average miner works only 200 days per year, and many a man works but 150 days. Since miners and their families must live, wages have to be adjusted to the short-time year with the consequence that coal costs more than if all the miners worked all the time. It has been estimated that 175,000 fewer miners could take care of our normal yearly demand if they worked six days a week regularly. This surplus of men is a national waste of labor power on a grossly extravagant scale. The overproduction of coal, too, results in hardships to the mine operator and the whole industry has been financially demoralized for a score of years—except during the hectic war period.

Fluctuation in Demand.—Secondly, our soft-coal mines suffer greatly from fluctuation in demand, the greatest demand coming in the winter months. It is to supply this peak demand that so many surplus mines are opened and so many excess workers retained. The onslaught of orders in the winter sends the price of coal upward, the price at the mines often reaching as high as two dollars a ton above the summer level. These high temporary prices call into being a number of new mines, an easy matter since bituminous coal often outcrops so near the surface, that even a farmer can gather it with his farm tools. Many of these “country-banks” become regular mines each winter. As the railroads are required by law to allocate cars without favor to all operating mines the “country-bank” mine can command its quota. This demand for cars at the peak of the winter demand for coal disrupts and disorganizes the activities of the larger, more permanent mines, and prevents them from securing the number of cars needed for their large-scale operations.

Fluctuation in Car Supply.—All the mines suffer throughout the year from a weekly fluctuation in car supply. Since the railroads work Sundays while the mines rest, the largest

car supply is on Monday morning. Daily throughout the week the supply drops until Saturday when the supply is less than 85% of Monday's. Mine output is directly proportional to car supply because few mines have the room or the other facilities required for surface storage. Production for the operator and work for the miner, therefore, is not only irregular between seasons but also within each week, even during those winter weeks when the demand is greatest. Except for the war period, the whole industry, as a consequence of the unnatural situation, has been and is riddled with discontent and loss.

Regularization of Output Needed.—What the bituminous coal industry most needs is regularization of output. This might be obtained by a sliding scale of prices, low in the summer to encourage purchases and high in the winter. It could also be secured by great storage facilities erected within the market areas, filled in the summer and emptied by winter sales. But to accomplish either reform requires the establishment of large-scale enterprise within the business, or else government control from without. The small mines and the potential competition of hosts of others not actually in existence threaten any scheme for reform.

Anthracite Coal in the United States.—The anthracite fields in the United States are limited to 496 square miles, all in northeastern Pennsylvania; the anthracite of Colorado, New Mexico, Virginia, Arkansas, and Rhode Island has no national commercial importance. Anthracite up to 75% of the total output is mined by eight large companies, all of them closely allied to railroads, while eighteen large-scale anthracite mining companies employ 83% of the miners. These figures contrast significantly with those for bituminous coal, mentioned above. Coal-mining as a whole employs 69% of all workers engaged in mining in the United States, and represents 46% of the value of all minerals; but anthracite coal has only 16%

of the workers, and accounts for only 12% of the value. However, the anthracite mines operate 90% of the time and have been highly profitable since 1898.

Efforts at Monopoly Control.—Since it is so highly localized, and has a large demand, anthracite offers the natural basis for monopoly control. But before 1892 competition was just as keen and just as disastrous in the hard coal business as is now the case in the soft. In that year efforts began to bring the producers together, largely initiated by the Reading Railroad, the largest owner of anthracite coal lands. The first attempts at agreement were not permanently successful but they demonstrated the value of co-operation because while the agreements lived profits were high, but when they were broken demoralization set in.

Beginning in 1898 a new method of control was established. The interested railroads—for railroad companies controlled three-fourths of the coal property—purchased each other's stock, which gave them a community of interest. Each road had its own separate mining company whose stock it controlled. But after the railroads were interlocked, the stock of the different operating companies was also interchanged. These practices made it possible to dominate the anthracite industry, and the scheme has been in continuous operation for twenty-four years.

The most interested railroads were the Philadelphia and Reading; Lehigh Valley; Delaware, Lackawanna and Western; Pennsylvania; Delaware and Hudson; and the Erie, together with their subsidiaries. The operating companies controlled by these roads are the Philadelphia and Reading Coal and Iron Company, Lehigh Coal and Navigation Company, Lehigh and Wilkesbarre Coal Company, Lehigh Valley Coal Company (includes Coxe Brothers and Company), and the Pennsylvania Company (including the Hillside Coal and Iron Company). In 1919 the combined production of these

companies was 73.4% of the whole and if the Susquehanna Collieries Company be added, the control was 80%.

Results of Monopoly Control.—These interlocked interests have limited production to demand and so kept up the prices. They have ordinarily given a summer discount of 50 cents a ton off the list-price for purchases made in April, 40 cents for May, 30 cents for June, and so on up to September when the list-price prevailed. They have also maintained great storage piles midway between the mines and the eastern market, and also on the Great Lakes. On September 1, 1920, the larger companies had 4½ million tons in storage plus 2 million more on the lake front. Although this double handling adds from 60 cents to a dollar a ton to the cost of coal, it enables the consumer to get coal when he wants it, and it regularizes mine operation. The limitation of output, summer discount, and storage permits mines to run throughout the year, and gives employment to the miners nearly every working day. In 1919 the mines operated the full 300 days.

Anthracite a Luxury.—But anthracite coal is a luxury fuel. It costs more to mine and sells at a higher price than bituminous. As compared with soft coal, anthracite mines are deeper, wetter, more folded and contorted in the veins, and the coal requires “manufacturing” upon reaching the surface. Because of these things anthracite coal costs 80% more to mine than bituminous.

By the term “manufacturing,” just used, is meant the operations performed in the breaker, a tall building in which the coal as it comes from the mine is crushed, sorted to size and cleaned from dirt or slate. Most of the demand for anthracite is for the large sizes to be used in domestic furnaces and kitchen ranges. But, manufacturing carefully as they can, the operators cannot get more than 70% of large sizes from the coal that passes through the breaker. The other 30%

must be sold in competition with bituminous coal for industrial purposes, but since the price set by the soft coal is less than the cost of production of small anthracite, the anthracite must be sold at a loss. Of course the result is an increase in the price of the large sizes, so that the total anthracite operations may yield a profit. The mine owners are endeavoring to educate the consumers to install devices that will burn small sizes, and they lower the price of these sizes to domestic consumers in order to further this object.

Anthracite Certain to Advance in Price.—Consumers, however, must face the probability of increasing prices for their anthracite coal. This is bound to come regardless of monopoly control. The veins easiest to mine are nearly all gone, and future mining must be done at increasing cost. Consumption demand is outrunning supply. In the northeast of the United States—the natural market for anthracite—population increased 30% between 1890 and 1900, but coal supply advanced only 10%. Since 1900 the relative advances have been in the same ratio of 3 to 1. Furthermore, the supply has already reached its maximum—90 million tons per year. The mines in the future will supply less rather than more coal. Moreover, in mining anthracite machinery is less easily applied than in mining bituminous because of the greater hardness of the coal and contortion of the veins. The latter difficulty will increase. Just when the increased price will shut off demand no one can say, but consumers are already turning to bituminous coal, electrical devices, and fuel oil. Probably we will never use all of our anthracite coal resources.

Other Fuels: Petroleum and Natural Gas.—Next to coal the most valuable mineral fuels are petroleum and natural gas. It should be borne in mind, however, that the fuel use of these minerals is only one of 500 other services ranging from lubricants or illuminants to medicines.

Since its discovery in America in 1859, the United States has supplied 60% of the world's petroleum, and currently we produce two-thirds of the world's output, our yield being in the neighborhood of 300 million barrels per year. Petroleum and copper are the two minerals of which we produce more than all the rest of the world combined. The only other countries that so far have offered us serious competition in petroleum production are Russia and Mexico—the former with one-fifth of our output and the latter with one-sixth.

Within the United States there are seven principal fields, the oldest in Pennsylvania, the newest in north-central Texas. Leadership has passed from field to field with the present supremacy divided between Oklahoma (32% of the total for the United States) and California (28% of the nation's whole).

Method of Obtaining Petroleum.—Since petroleum is a liquid mineral, it is obtained by methods similar to those used for water or salt rather than for mining. Before 1859 when the collection of petroleum was limited to Indians, only oil that came to the surface was utilized. It was skimmed from the top of a water pool, or blankets were thrown into the water and then the oil and water wrung out and separated. Of course only very small amounts could be obtained in this way. But there was no demand for more oil because its only use was for medicine, either to rub upon aching swollen joints or to be taken internally.

After white men learned from the Indians the medicinal value of petroleum, more oil than the Indian method provided was secured by digging shallow wells at the place where surface indications appeared. These wells were in appearance and use like those for water. Salt wells often showed traces of oil and some had so much petroleum mixed with the brine that they had to be abandoned for salt-making.

Drake, in 1859, inaugurated the modern oil industry by

successfully drilling for oil in a manner already made familiar in the operation of artesian water wells.

Organization of Oil Well Industry.—Despite the valuable aid rendered by geologists, the location of an oil well is always a gamble. Consequently it has been a business largely relegated to individual enterprise. There are a few large-scale oil-drilling companies operating in different fields and owning numerous wells.

The parts of the industry that lend themselves to modern business organization are the transportation, refining, and distribution of oil. These are treated elsewhere in this book.

Iron Mining.—Next to aluminum—which is found in every clay bank—there is no mineral so widespread in the earth's crust as iron. It is present in rocks, streams, vegetation, and our own blood. Yet iron is never found in a pure state save in meteors and it occurs in usable quantities or forms in only a few places; chiefly in the United States, Germany, France, and Great Britain, with smaller but valuable deposits in southern Russia, Sweden, Spain, and Cuba. The United States accounts for 40% of the world's output, Lorraine for 25%, the Cleveland district of Great Britain for 2.6%.

Within the United States iron is mined regularly in 28 states, while several others contain deposits; but the Lake Superior ore fields supply 80% of our output and 30% of the world's production. Compared with our other metals, iron is far in the lead, as shown by the following values based on a five-year average of prices at New York:

Butte: copper, silver, and gold.....	\$ 48,000,000
Joplin: zinc, lead.....	16,000,000
Coeur d'Alene: lead, silver.....	13,000,000
Lake Superior: iron.....	290,000,000

In the United States there have been three types of iron deposits of economic importance.

Bog Ore.—In many lakes or swamps there is a minutely lowly form of life that has the power of extracting iron from the water and precipitating it upon the lake-bottom, just as oysters are able to take lime from seawater and build it into their shells. Iron so deposited in swamps is called “bog ore.” All along the Atlantic Coast are iron deposits of this character, and these supported almost all the colonial iron furnaces until just before the Revolutionary War.

Since the mining of iron depends upon the character of the ore, “bog ore” was collected in the same way that men gathered oysters. A man, a rowboat, and grappling tongs were all the equipment needed. Of course this “mining” was slow, laborious, and expensive, for the best a man could do would not yield more than two tons of ore per day.

The man who owned the small-blast furnace usually employed his own men to mine his own “bog ore,” and both the mining and the refining were small-scale individualistic enterprises. Sometimes farmers mined bog ore upon their property as a by-time job just as they now cut and haul railroad ties. “Bog ore” today although existent has a historical rather than a practical interest.

Quarry Ore.—In order of time, the second sort of iron ore used in America was that collected in limestone regions. There is a peculiar antipathy between iron and limestone. Consequently, whenever water-bearing iron in solution passes over limestone there is a tendency for the water to dissolve the stone, carry it away, and leave behind the iron.

In the United States there is a series of limestone valleys stretching from the Canadian boundary along the borders of Lake Champlain, down the Hudson in New York, the Lehigh Valley in Pennsylvania, and the Shenandoah and Cumberland valleys from Pennsylvania to Alabama. Throughout the entire length of these limestone valleys, iron ore is found. Since the valleys were travel routes for pioneers the iron deposits were

important in supplying frontiersmen with tools or weapons. Today Birmingham, Alabama, contains one of the most significant iron industries in the United States. Its output represents $3\frac{1}{2}\%$ of the world's production of iron ore, and, within the United States, is second in production to the Lake Superior region.

The pioneers obtained iron from these limestone areas by quarrying rather than mining; the ore was blasted down, broken into lumps, and carted to a smelting furnace. These "quarrying" operations were organized like those connected with "bog ore."

The Alabama field today, however, is both quarried and mined, depending upon whether the ore is near the surface or dips far below it. This field is controlled by the Tennessee Coal and Iron Company whose mining operations are subordinate to its iron manufacture. The corporation in turn is a subsidiary of the United States Steel Corporation.

Smaller independent iron-makers in Pennsylvania mine the local deposits of iron associated with limestone. For the most part the mining organization is not separated from the refining (manufacturing) company.

Lake Ore.—But by far the greatest iron beds in this country, or anywhere in the world, are those around Lake Superior formed by "replacement." Iron-bearing waters attacked certain rocks, dissolved them, particle by particle, and over a long period of years left iron in the place of the minute pieces of rock carried away. This took place over a wide area in northern Minnesota, and today these ore deposits are the principal source of supply for our iron industry.

In these great mines of Minnesota—and here only—startlingly original methods of mining are encountered. This Lake Superior ore is so soft that it can be handled like dirt; the veins, too, are near the surface. When the overlying burden of

earth is removed, the ore can be scooped out by steam shovels. Since these ore beds are a long way from the Pittsburgh, Chicago, and Buffalo furnaces, and since the Great Lakes are closed to traffic part of the year, a great pressure is put upon the mining companies to speed production so that the short mining season may supply enough ore to run the furnaces throughout the year. Handling of ore has also been facilitated by remarkable contrivances. Ships are loaded by gravity at the rate of 20,000 tons an hour, and unloaded in half a day. Because this ore must be carried 1,000 miles by water and often 200 miles by land, there has been developed in connection with it the cheapest bulk commodity transportation in the world. The ore travels for seven-tenths of a mill per mile. If the journey were entirely by rail instead of largely by water, it would cost seven times as much per ton mile. The best rate an all-railroad haul could offer would be 5 mills per ton-mile. The Great Lakes together with the specially designed ore-carrying boats are therefore vital factors in our iron business.

Open Pit Mining.—The ores are obtained by three methods: open pit, milling, and underground. By far the most of the ore is dug in open pits. These may be enormous amphitheatres with a series of terraces, each wide enough for a railroad track, and 40 feet apart vertically. In some mines there are seven such terraces, so that the deepest portion of the pit is as far from the ground surface as the basement of a skyscraper is from the flagpole on top of the tower. Other mines are square; others long and narrow. The ore is removed by steam shovels 5 tons at a bite, one bite every two minutes. In one shift one shovel has dug and loaded into cars 7,689 tons of ore. More dirt has been carried away in uncovering these ore beds than was taken out of the Panama Canal. Such figures explain our output per man as compared with our competitors, shown in the following table;

OUTPUT IRON ORE PER MAN

	Metric Tons
United States.....	590
World average.....	320
World average, exclusive of U. S.....	230
Sweden.....	400
France.....	304
United Kingdom.....	230
Germany.....	201
Spain.....	140

Milling and Underground Mining.—In milling ore instead of using steam shovels after the ore is laid bare by stripping, a slope is driven beneath the ore, and from the end of this cellarway other tunnels are pierced. From these tunnels raises are made to the ore overhead; and then the miners with pick and explosives loosen the ore and send it pouring down through the raises to cars waiting in the tunnels below. Underground mining is similar in every way to coal mining.

Our Mining Unique.—Which is best—open pit, milling, or underground—is determined by an examination of ore veins by specialists before any work is started. Open pit and milling are preferred because of their simplicity, safety, and certainty of results, but they require a large initial capital investment. Iron mining by these methods is unique; there is no other iron mining like it anywhere. In gross output and cheapness per unit no other mining can compare with it. The ore-beds that permit such mining are the real foundation for America's prominence in iron and steel manufacture.

Organization of Lake Ore-Mining.—The United States Steel Corporation mines and ships 55% of the Lake Superior ores and controls 75% of the known reserves. For these purposes separate corporations have been formed but they are completely dominated by the parent company.

Steel Alloy Minerals.—All steel is an alloy of iron and carbon, but the expression "alloy steel" usually refers to cer-

tain special varieties in which small quantities of one or more of a half-dozen minerals are added to steel to give it particular qualities. Manganese, chromium, nickel, tungsten, vanadium, antimony, and molybdenum are the most customary minerals used for this purpose. Additions of these to steel in quantities usually less than 1% and seldom as much as 5% give to the metal such varying characteristics as extra hardness, toughness, elasticity, durability, brittleness, density, porosity, resistance to oxidation or corrosion, malleability, and fusibility. Although the minerals named are by no means limited to use as steel alloys, nevertheless that service is their principal function. In these minerals the United States is poverty-stricken except for molybdenum and tungsten in which production we are the world leaders.

Copper.—Copper has been known to man since earliest historical times and, either alone or alloyed in the form of bronze or brass, has served man longer than any other industrial metal. But as copper was so scarce and so expensive to mine that it could not enter widely into industry, iron has usurped its place. However, copper's high electrical conductivity, endurance, and ductility has rendered it invaluable in the electrical industries; hence it has advanced with prodigious leaps since electricity has become such a common aid to man. The world's output of copper increased 5% per year for ten years before 1914, but since 1914 its production has advanced 15% per year.

In our country there are only two copper-mining regions in the east, one in northern Michigan near Lake Superior, and the other at Ducktown, Tennessee. However, the Sudbury mines of Canada contribute to our eastern copper market. Our principal copper mines are now in Arizona, where there are four distinct districts, and in Montana, and Utah. A small amount of copper ore also comes from the state of California.

Lake Superior Copper.—Of all these districts the Lake Superior one has the advantage of the cheapest mining. Its ore is most uniform, and can be concentrated easily, with smelting reduced to a minimum. The mines are dry and safe; there is plenty of timber and water in the neighborhood; and the lakes offer the cheapest of water transportation. In short, all the conditions are so favorable that mining has been conducted for 8 cents per pound of copper. Since the average price of copper has been 15 cents a pound the profit in the Superior mines is apparent. The Calumet and Hecla copper mines have been among the most profitable mining enterprises known to the world. But the days of greatest profit have passed, for many of the Superior mines are now nearly a mile deep, and the richest and most available ores are gone. Nevertheless this region is still the one with lowest cost in copper mining.

Montana Copper.—Because the Lake Superior district could not supply all of our requirements for copper, we have turned to other deposits despite their higher costs of mining. The first of these to be exploited was the Anaconda mining group in Montana. This region was semi-arid, hence timber and water were relatively scarce. Wages were the highest for copper miners in the United States. The mines were distant from settled regions and the railroads had to climb steep grades. In fact it costs six times as much to send copper to New York from Butte by rail as from Lake Superior by water. Furthermore, 40% of the Montana ores must be smelted, whereas only 4% of the Superior ores require that process. But so great was the need for copper that for a number of years the Montana mines led the nation in production.

Arizona and New Mexico Copper.—Demand insatiate and unfilled turned the search for copper into Arizona and New Mexico. There the ores are the poorest we possess, for they

must all be smelted. The aridity and the isolation of the mine region, together with the character of the rock and the twisted nature of the veins, makes mining more expensive than in any other of our copper districts. Nevertheless we need copper so badly and there is so much in this area, that the district now leads the nation in production.

At Bingham, Utah, copper is mined with steam shovels similar to the methods used in the iron ranges of Minnesota.

Improvements in Copper Mining.—We are constantly improving our methods of mining copper and are finding it profitable by the new means to mine ever lower grades of ore. In 1907 the lowest limit was ore that ran 42 pounds of copper to the ton, but we now manage ores that have only 34 pounds to the ton. The average of copper produced per man employed in 1912 was only 75 pounds, but in 1916 it had reached 100 pounds, with nearly a fourth of the mines getting over 300 pounds per man.

Furthermore, the copper we are now using is likely to be with us for a long time because copper does not waste rapidly, and like iron may be remanufactured. A statue made of copper taken from French cannon and erected at Waterloo after Napoleon's defeat was remelted and recast into cannon for the World War. These cannon are now awaiting a peace use for their copper content for another series of years. If in spite of its long life, copper through its demand and scarcity ever becomes too high priced, we always have the possibility of turning to aluminum.

Organization of Copper Mining.—In organization, copper mining furnishes illustrations of every variety from small-scale individualistic, independent operations to large-scale corporate enterprises. Some act as independent copper miners, some associate themselves with refiners and manufacturers, while others become units in a big system that mines, refines, and

sells not only copper but lead, zinc, gold, and silver. The most usual organization is a large-scale mining corporation subordinate to or associated with a refining corporation.

Lead and Zinc.—These two metals are considered together because they are seldom found separately in nature. In fact in the United States, which supplies more than a third of the world's output, there is only one lead deposit without paying zinc and that is in southeast Missouri. On the other hand, we have only two distinct zinc areas without lead, one at Franklin Furnace, New Jersey, the other at Mascot, Tennessee. Mixed with lead and zinc ores, too, there will be usually more or less silver, some gold and frequently other metals as well. Zinc was so often associated with other ores that smelters charged a "penalty" if it exceeded 6% of the ore received. This penalty led to one of the greatest metallurgical advances in recent years—a method by which zinc could be recovered from the ores before their other metal contents were treated.

Within the United States the regions which are most important for zinc and lead mining are southeastern Missouri (33% of national output), Coeur d'Alene, Idaho (27%), Utah (18%), Joplin [in Missouri, Kansas, Arkansas, and Oklahoma] (6%), and Colorado (5%).

The mining of these metals closely resembles copper mining except that lead ores are three times as rich as copper and hence sell for one-third of the price. Southeast Missouri is to the lead-zinc industry what Lake Superior mines are to the copper industry.

Likewise the organization of lead-zinc mining shows all the varieties found in the copper industry. The largest independent American corporation whose business is most intimately connected with the mining of lead and zinc is the American Zinc-Lead and Smelting Company. This corporation, organized in 1899, owns and operates eight other corporations all devoted to the development and operation of mines

and mineral lands, while one subsidiary, the American Zinc Sales Company, indicates by its name the function it performs. The parent company owns 32,000 acres of mineral land and operates other holdings by lease and royalty. It has a capitalization of four million dollars.

The Precious Metals: Gold.—The earliest known reference to gold is dated 3800 B.C. when an edict of Menes fixed its ratio to silver at $2\frac{1}{2}$ to 1. This indicates that gold then as now was principally a medium of exchange. Of course much of it, too (about 25%), has always been used in the arts. The British and ourselves control the gold supply of the world both politically and commercially. Of the former the control is divided 62.9% in the hands of the British and 19.3% in ours. Commercially the British proportion sinks to 63%, while ours rises to 23%.

The extraction of gold from ores is one of the simplest of metallurgical problems. Before 1850 nearly all gold was mined in places where pure gold was physically separated from surrounding sand. The largest nugget ever found was in Australia; it weighed 2,520 ounces, was worth \$42,000, and was appropriately named "Welcome Stranger." Most gold, however, was discovered as minute flakes or grains. Between 1850 and 1890, gold adhering physically to ore was separated by treating it with mercury, the process being called "amalgamation." Since 1890 a third process has arisen in which smelting ores and treating them with cyanide has come to the fore.

The greatest gold mine in the world, so far as tonnage and gross value is concerned, is the Homestake in the Black Hills, South Dakota. The original investment in this property was \$200,000. The present capital (built out of earnings) is 25 millions. In the last ten years, it has paid stock dividends of 15% and cash dividends of 17 million dollars. This property is in the hands of the Hearst family. As a whole, how-

ever, gold mining has been less important and profitable, has paid smaller dividends, and is in the hands of a larger number of smaller producers than copper mining. This applies only to the United States, however; in the world at large the reverse is true.

Silver.—For the most part silver is a by-product of other mining, principally in connection with lead, copper, and gold. A third of the world's silver comes from the United States. The Rocky Mountains in the United States with their continuation in Mexico, and the Andes in South America seem to be the world's richest silver regions. In the East silver is used for money in preference to gold—India and China buy 40% of the world's silver output through four London firms. We use it also for money but as a subsidiary to gold. Silver enters into the arts, however, more largely than gold.

CHAPTER VI

FOREST RESOURCES

The Forest Area of the United States.—Before men came to America forests covered the continent to the extent of 822 million acres, a stand of trees that constituted the most magnificent commercial timber resource in the world. Although over two-thirds of this original forest has fallen before the axe and fire, we have still about 137 million acres of virgin forest and 463 million acres of tree-covered land. In quantity of useful forest stand the United States is unsurpassed.

Distribution of the Forests of the United States.—There are only two large areas in the United States that are lacking in economic stands of timber, and even these have some tree growth, for no state in the union is completely devoid of woodlands. The states that lie within the Great Basin between the Rocky Mountains and the Sierra Nevada ranges are too arid to permit extensive tree growth except on the tops of the highest land or bordering the infrequent, intermittent water-courses. Likewise the states within the Great Plains situated between the 100th meridian and the Rocky Mountains are semi-arid in character and are almost entirely without tree cover. To be sure settlers have planted woodlands as wind-breaks and decorations but these can hardly be classed as commercial forest areas.

All of the rest of the country can boast of extensive tracts of forest land most of which is more or less exploited commercially.

Usefulness of Forests as Forests.—A forest by itself, without reference to the lumber which it yields to the service

of man, is of value as a natural boundary, a regulator of rainfall and climate, a game refuge, an animal range, a recreation center, and a source of fuel.

Forests as Boundaries.—In older and simpler times than ours, forests were used as boundaries, for they acted as barriers between peoples. Sometimes where no natural forest existed one was planted. Boundaries were not lines but zones—tree-filled for protection against invasion. On the other hand, the forest itself became the refuge for men outlawed for political, religious, or personal offenses, the story of Robin Hood and his band being by no means unique in history or in literature.

Forests and Rainfall.—The forest conserves rainfall partly by catching and retaining it among leaves or branches (10% to 25% of a rainfall) and partly by absorbing it in the forest floor. The latter action is directly proportional to the dryness of the floor; if it is already saturated, it passes on further rainfall as rapidly as it receives it, but if the ground be dry it will take up the whole of a five-inch rainfall, filtering it slowly into streams at a later time. This action of the forest alleviates floods, and helps to maintain regular stream flow. Hence men interested in river navigation, water-power for manufacturing, or irrigation projects are all anxious to maintain a forest cover at the headwaters of streams. A country with a forest area of less than 20% shows periods of prolonged droughts, frosts, and floods, alternating with low water. Portugal, Spain, Greece, Turkey, and Italy are all cases in point. England and Holland are saved from like fate by their insular climate.

Furthermore, a forest covering the soil prevents rapid erosion; it tends to preserve a rounded topography and prevents the formation of sharp peaks scarred with deeply gullied sides.

Forests and Climate.—Whether or not forests actually increase rainfall in their area is a moot question which as yet has had no satisfactory scientific proof or disproof, although many scientists believe that rainfall is augmented by dense tree growth. It is known, however, that forests modify climate because they are cooler in summer than nearby places directly exposed to the heat of the sun, and cool air flows from the forest to the warmer adjacent territory. In winter the forest shields its own inhabitants and those on open places to leeward of it, from the rigors of cold winds.

Forests a Game Refuge.—A forest is a refuge for wild life, feathered, furred, or hairy. This fact appeals to the humanitarian through its saving of life, to the recreationist because it maintains species valuable for hunting, and to the economist partly for the reason that some of the wild life furnishes commercial pelts or plumes, and partly because some forms of wild life war upon pests inimical to man himself. The fish of forest streams yield 21 million dollars worth of food per year. The deer of six states are said to be worth one million dollars a year. Forest furs amount to 8 million dollars a year. How much the forest birds save farmers per year is impossible of measurement but was sufficient to gain farmer support for a law protecting migratory species of birds.

Forests as an Animal Range.—In by-gone days cattle and hogs roamed the forest for food, eating leaves, shrubs, roots, nuts, and seeds. At present grazing privileges in the open spaces of forests are among the valuable assets that men strive to gain. Great herds of cattle and sheep are turned systematically into the western forests every year. In the east also, cattle and hogs range among the trees, but the feeding is not so carefully regulated and controlled as in the west. This is due to the fact that the national forests are the principal ones used for grazing, and the greatest reserves are in the west.

Forests as Recreation Centers.—In all times, including our own, the forests have provided men with recreation. Hunting is one of the most ancient of man's pleasures and the forest has always furnished the means for its exercise. It is interesting to note that the first foresters were professional huntsmen, and leadership in the chase has only recently been subordinated to other forest activities. The forests and lakes of Maine attract yearly a horde of visitors. The money spent in the state by these summer sojourners amounts to about 50 million dollars per year and constitutes no mean share in sustaining the citizens of Maine.

Forests as Sources of Fuel.—Fuel has been one of the forest's great gifts to man; in fact, until the relatively late discovery of coal and its availability by means of railroads, wood was the most essential fuel. It is said that the Court of Weimar, about 1600, burned 1,200 cords of wood per year, and many old records show that a family fuel consumption of 200 cords of wood was normal. Even today hundreds of American homes use no other fuel than wood and nearly all homes employ it in conjunction with coal. During most of the world's history, except as peat or animal droppings supplied fuel in special places, man had to limit his home to regions where wood fuel was available. Before the time of kerosene or even candles, resinous pine knots were household illuminants.

Usefulness of Forests as Sources of Lumber and Allied Products.—Of course none of the foregoing utilities of a forest compare with its economic importance as the source of lumber, poles, props, and ties.

The lumber cut of the United States is more than half that of the entire world. Wood enters into our manufacturing to a greater degree than any other commodity, except iron or steel, and the ordinary everyday life of each person to a sur-

prising extent is dependent upon lumber products of one kind or another. From houses to toothpicks, from cradles to coffins, men make use of lumber products.

Forest Products in Mining.—Mining usually cannot be carried on economically where there are no forests to supply fuel and props. It takes about 10 million acres of woodland to keep the mines supplied with timbers and fuel. There are ore-bodies of proven worth in Arizona, Nevada, and eastern California that have never been worked except fitfully and unprofitably because of the prohibitive cost of wood in such arid districts.

Forest Products Used by Railroads.—Railroads have never found a satisfactory substitute for wooden ties, and use 125 million of them yearly to maintain or extend their lines. Since an acre normally yields but 200 ties, the railroad requirements force the cutting of 625,000 acres of woodland per year. In addition to ties, the railroads use about the same amount of wood for poles, fence-posts, cars and bridge timbers.

National Wood Consumption.—Without naming the multitudinous familiar services which wood renders us, we can sum the matter up by stating that for every man, woman, and child in the country from 300 to 500 board-feet of wood are consumed per year. In the states where development has taken place recently, the consumption of wood is greater. For example, the per capita consumption of Montana is 1,234 board-feet and Oregon 714 board-feet. On the other hand, Pennsylvania uses 292 board-feet and New York 206 board-feet. Likewise, our industrial centers are great consumers of wood. For instance, Pittsburgh uses more each year than is cut in the whole state of Pennsylvania.

As a result of all these direct and indirect services, men live most abundantly where forests are found, and throughout

the history of civilization, man's greatest progress has been intimately associated with regions having access to generous forest resources.

The Four Stages of Forest Exploitation.—Dependent upon forests in so many ways, one could suppose that men would cherish and preserve their timber resources, but such has not been the case. Lest we be too harsh in condemning our own short-sightedness, it may be well to state that every forest-using nation has shown similar successive stages in its attitude toward its tree wealth.

There is always an early period in which the value of forests is unrecognized; in fact, forests are considered almost as free goods without any attributes of private property. In this primary stage, wood resources are always used unwisely and wasted prodigiously.

This period is generally followed by^{*} one in which forests are listed as private property and conservative lumbering applied. A third stage comes upon the heels of the second. The third is represented by efforts to reseed cut-over land or waste places.

Finally, a period ensues in which forests are managed for continuous cutting in perpetuity. Germany and France had passed through these phases before our nation was born. England early experienced the first two but disregarded the later two until after the World War, having been aroused at last to the national danger involved in a lack of a national forest policy.

In the United States the first period was prolonged until about 1900 when the exhaustion of white pine awoke us to need for change. Since the opening of the century we have rapidly entered upon the three successive stages.

Depletion of American Forests.—Three-fifths of the timber once standing in the United States is gone. Our annual

demand for lumber is at least 35 billion feet, and in addition we call for millions of cords of pulp and cordwood and other forest products.

In short, the drain upon the forest is from three to five times the annual growth. These facts are made more serious because the depletion and exhaustion of forests has been most complete in the east or middle west where most of the population, agriculture, and manufacturing are concentrated. What has caused this situation and what results flow from it are worthy of careful attention.

The Causes of Depletion: 1. Forests a Menace.—The first arrivals in what is now the United States, landing at Jamestown, Plymouth, and Boston, found forests extending almost to the edge of the Atlantic. Although these forests proved useful in furnishing home-building materials, fuel, ship supplies, and fur or meat animals, nevertheless they constituted a barrier to settlement. The unencumbered valley lands were soon appropriated in all the colonies; thereafter immigrants had to clear their agricultural lands within the forest itself. Cutting was aided by burning and ringing the trees but clearing a homestead was an arduous task. To keep the plot cleared necessitated a constant battle, for the seeds from forest trees constantly invaded the home lands.

Similar struggles were met everywhere in the first westward advances of the frontier, so that after a few generations it is not surprising that the American psychology deemed forests an almost unmitigated nuisance, to be eradicated with dispatch. It is astonishing that European habits of mind held over long enough in the colonies to stimulate legislation aimed at forest preservation. The colonial records of New Hampshire, Pennsylvania, and New Jersey all bear witness to this fact. But these few early enactments, passed for the most part before 1700, were soon engulfed in the pressing conditions of the new environment that called for the speediest

removal of the burden of trees so that agriculture might thrive. Destruction of forests then became deeply fixed in American practice.

This mental attitude toward depletion of wood resources was carried far beyond the need that produced it, and was not corrected until, with the passing of two centuries, it was sharply challenged by forest exhaustion. Meanwhile our large surplus of forest resources had caused an almost unparalleled waste. We have more than 80 million acres—an area greater than the combined forest lands of France, Belgium, Holland, Denmark, Germany, Switzerland, Spain, and Portugal—of former forest, now denuded of all commercial timber, and used for no productive purposes. And we are adding to this idle land at the rate of 10 million acres a year.

2. **Fire.**—But the axe and saw have been no greater death-dealing instruments to trees than fire. The annual loss due to this cause is equal to 3% of the total amount of wood consumed, and measured in dollars is equivalent to 25 millions.

Some fires brought about by lightning would occur whether or not men had connection with the forests. Others are set by persons with the selfish design of improving or enlarging grazing areas, but by far the most fires are the result of man's carelessness. Unguarded camp fires, thoughtlessness of smokers, sparks from locomotives and logging engines, all are responsible for serious damage yearly.

CAUSES OF FIRES—NATIONAL FORESTS

	Percentage of Total	
	1919	1920
Railroads.....	10.31%	8.36%
Lightning.....	32.31	50.69
Incendiarism.....	4.99	4.03
Brush-burning.....	5.29	4.08
Campers.....	21.56	17.33
Lumbering.....	4.09	3.47
Unknown.....	16.98	7.98
Miscellaneous.....	4.47	4.66
	<hr/> 100%	<hr/> 100%

The carelessness of logging companies in their disposal of slash prepares the fuel for a carelessly originated fire to sweep destructively through a forest. Fire seldom sweeps through virgin forests, because of the absence of slash; man therefore is a great contributing agent in the desolation of forests.

The fires not only destroy the trees they consume but injure many others, and open the way to ravages by decay or insects. Furthermore, the forest soil is reduced or removed by fires; repeated fires make a former forest floor a sterile lifeless ruin. Finally, fires modify the density of blocks of timber, and in so doing change the reproductive relationships so that inferior growths more often succeed valuable commercial stands.

So potent a factor in depletion is fire that the first step in a conservation policy is provision for fighting the lurid monster.

3. Taxation.—Nearly everywhere in this country forests are included in the provisions of the general property tax. This imposes an annual assessment upon a possession that does not yield an annual income. If the assessment rate is low or if the law is not rigidly enforced, the forest owners suffer no undue hardship. But if the opposite conditions prevail, much hardship may be inflicted upon timber owners.

In either case, but more pointedly in the latter, timber is sacrificed to pay the tax. The aggregate of trees cut in order to satisfy governmental collectors must be large. Manifestly such logging bears little relation to the demand for wood, and many trees are felled before their prime. Taxation has been sufficiently accountable for timber depletion to warrant a method that would preserve the forests. It is suggested that either the land and the trees be taxed separately, or that one tax be levied at the time when the trees are converted into logs.

4. Carrying Charges.—The depletion of the white pine forests of the Great Lakes region within a period of thirty years, from 1870 to 1900, seemed to many interested individuals to point a moral. They thought they foresaw an early exhaustion of all of our national timber resource, and hence put forth frantic efforts to secure title to forest areas that still remained intact. Some of this "forest grabbing" took place in the south but it was most notable on the west coast. For a period of years a boom in timber buying took place.

Unfortunately many purchasers were not financially strong enough to bear the burden of long-carrying charges. Others had this weakness aggravated by an original inflated purchase price. In all cases the accounting systems in vogue in the industry caused carrying charges soon to outrun purchase prices. Inevitably there came, after ten or fifteen years, a process of unloading. Timber was cut to satisfy the financial necessities of its owners rather than any actual market demand. The reserves intended for the future were therefore, in part, cut in the present. This movement has been general enough to constitute a considerable element in the rapid decline in forest resources.

5. Isolation of Lumber Camps.—Many lumber operators are forced into continuous and large-scale cutting because of the isolated nature of their business. Labor is hard to secure in a forest, but once obtained is usually far removed from any other source of a livelihood. Hence, partly to hold their labor gangs together, and partly because they feel obligated to provide work for the men lured from their natural habitations, some timber owners or loggers keep on cutting day after day regardless of the condition of the market.

Likewise the sawmill operators, sometimes the same individuals as the lumber operators, sometimes different ones, are actuated by similar motives. The practice is aggravated by the fact that our sawmill capacity is several times the normal

annual consuming demand. To keep their mills going owners call for logs without reference to the demand for lumber.

A falling lumber market therefore is not always reflected in reduced logging in the forest. Lumber has often been shipped to consignees with orders to sell it at any price it will bring. High grade lumber sold at low grade prices is likely to be put to low grade uses; with the result that back in the forest the marketless low grades are burned to make way for more high grade stuff sacrificed before its time. These practices contribute largely to the causes that are reducing our forest resources at an unprecedented and needless rate of speed.

6. Competition between Regions.—Since the opening of the Erie Canal there has never been a time when the lumber markets have not been able to command the supplies of more than one region. The resulting competition has always reduced the peak of lumber prices and while consumers have benefited they have done so at the sacrifice of resources, for high grades at low prices have excluded low grades from the markets and advanced the rate of felling high grades in the forests.

Railroads have increased the regional competition in order to further their own business, by reducing the freight rates on long-haul lumber business. The railroads tapping the southern forests did this for the benefit of the mid-western market, and likewise the Hill roads did it for west coast lumber entering Minneapolis and Chicago. This means that each forest region sought for markets outside its own domain long before the market necessities would normally cause a search for lumber in that region. Temporarily the favored market gained the advantage of low prices on high grade lumber but the consequent waste of timber has been appalling.

Of course, there have been sound economic reasons why some lumber has always entered markets from a distant forest region long before the region as a whole has been called upon. The differences in costs of production within any one region,

even one favorably situated near a market, have always been greater than the freight differential from a distant region. For instance, the lowest cost lumber of Oregon could sell against the highest cost of lumber of Pennsylvania in the Pittsburgh market because the freight rate of \$15 was less than the differences in cost. But the lowest cost Oregon lumber could not compete with the lowest cost Pennsylvania lumber if the Pittsburgh market could have been satisfied by Pennsylvania producers alone. The demand in Pittsburgh, however, was so great that the price of lumber was not set by the lowest Pennsylvania producers but by those high enough up the scale to admit the lowest cost Oregon lumber in competition. No one could object to this sort of early call upon a distant region, but the movement has been artificially stimulated with detrimental results.

Forest Depletion—Effects: 1. Reservations.—Among the first effects of a visible depletion of forest resources was a quickening of efforts to set aside portions of the forest areas as future reserves.

It has been noted above that a few of the earliest colonies made attempts to reserve timber; similarly, under instructions from royal authority colonial representatives of the crown sought to reserve selected trees for shipmasts or timbers. Trees marked with the broad arrow were to be cut only upon express order, a provision that most of the settlers openly or secretly flouted. All of Penn's original deeds in Pennsylvania contained a provision that one-sixth of the area included in the grant be maintained as woodland. After the Revolution in 1799, Congress appropriated \$200,000 to reserve certain Georgia tracts of woodland for the use of the United States Navy, and again in 1822 federal legislation attempted to protect or reserve live-oak and red cedar in Florida for naval purposes. When the Erie Canal was in building, De Witt Clinton in 1828 endeavored to arouse New York State to the

need of preserving forests in the Adirondacks at the headwaters of streams that fed the canal. Clinton's reservation propaganda, however, was given scant consideration.

From then until 1891 no official protest was raised against the rapid destruction of one of our greatest natural resources. It took a jolting body blow to hammer home the idea of reservations; this blow was delivered in the eighties when the supposedly endless forests of white pine were found to be almost exhausted.

The interest in and discussion of reservation that followed culminated in congressional action in 1891, when a five-line "rider" on an irrelevant act authorized the president to withdraw public forest lands from private exploitation. This well-nigh surreptitious authority was seized immediately by the president and the policy of reservation began.

Changing Intentions behind a Reservation Policy.—The words "forest reserves" have a psychological interest because they indicate the original purpose of national forests, namely, to withhold them from use until future times. This idea is definitely—and unfortunately—expressed in a clause of the New York State Constitution which as a result of incautious revision, entirely prohibited the cutting of trees on the public lands of the state.

Gradually public opinion inclined to the view that the purpose of reserving forests for the future was not inconsistent with their use in the present. It was seen that if annual cutting does not exceed annual growth, the forest as a whole will be retained for unborn generations while existing current demand can be partially met. Professional woodsmen proved also that judicious cutting is more beneficial to the forest than the prohibition of molestation of trees ripe for the axe or saw. Furthermore, it was learned that the forests can be opened to grazing without harmful results if the grazing is regulated by public authorities.

Recognition of these facts removed much opposition to the reservation policy and enabled Congress in 1897 to extend the area of the reserves and authorize the proper use of the public forests. Eventually in 1907, to escape the implication of the name "reserves," Congress changed it to "national forests."

By 1922, due to various additions to the national forests proclaimed by successive presidents, together with similar state forests, as much as 21% of all standing timber had been brought under governmental authority. The total area in reserves, 180 million acres, is larger than any one state, larger than all New England plus New Jersey and Delaware, and larger than the combined areas of New York and Pennsylvania.

What may be accomplished by public forests is illustrated by the town of Orson, Sweden. Three generations ago this little place bought for itself a forest. By wise use this forest has yielded an income during the past thirty years of 5 million dollars, a sum sufficient to pay all town expenses and to provide free telephone and street-car service.

Minor Purposes of a Reservation Policy.—The principal aim in the creation of public forests in America has been to restrict wholesale destruction of a natural resource—an object made necessary by the rapid depletion of wood lands under private ownership and operation. To this main purpose others have been added among which are maintenance of cover on the headwaters of streams used for power, navigation or irrigation, prevention of floods, preservation of wild life, saving of places of great scenic beauty, regulation of grazing, and provision of resorts for out-of-door recreation. A few states, notably Oregon, Minnesota, New Hampshire, and Louisiana, have brought even private forests under public control, and this movement is spreading rapidly.

Private Reserves and Forestry Schools.—The creation of national forests was followed by similar efforts on the part

of private owners in buying reserves for themselves. Since both types of holdings require scientific forestry methods, a need arose for professional foresters. To supply this demand, a forest school was started on the Vanderbilt "Biltmore Estates" in 1898 and another was established in the same year at Cornell University. Yale University followed in 1900 with a forest school endowed with \$200,000 by the Pinchot family. Other notable schools were established at the University of Michigan and Harvard. In addition to these, which were graduate schools, nine colleges set up undergraduate schools of forestry and ten gave forestry courses. Scores of institutions now include forestry instruction.

Scientific forestry is practiced in 70% of all public forests but less than 1% of private holdings apply it, and the latter still comprise four-fifths of all of our timber lands. The time element in maturing a crop, the burden of taxes and the ravages of fire, together with the large number of individuals with small holdings, all militate against scientific forestry in private hands.

Arbor Day.—The crusade for tree-planting inaugurated in Nebraska in 1872 by J. Sterling Morton, afterwards Secretary of Agriculture, although it culminated in Arbor Day, cannot be classed as scientific forestry or as having a bearing upon the policy of forest reserves except as it aroused a sentimental interest in trees. Of similar import was the marriage law of Saxony of 1700 which required that a bridegroom prove that he had planted a certain number of live-oaks, or the Prussian Act of 1719 that ordered a prospective husband first to plant six oaks and six fruit trees.

2. The Conservation Movement.—A secondary and indirect effect of forest depletion was to arouse public interest in all natural resources. From trees, men turned their thoughts to mines, land, fisheries, and finally to human life itself. This

thought crystallized into the conservation movement which occupied an important place in the public discussions immediately after the opening of the twentieth century. President Roosevelt lent his vigorous personality and public support to the movement, and did much to bring the agitation to practical results in reserving remaining resources in the public domains from private exploitation. The national forests were only one of the objects of this more general crusade.

3. Speculation.—A third effect of forest depletion was not so happy as the foregoing. The disappearance of white pine that so effectively aroused public conscience regarding our resources also awoke private individuals to the value of our remaining timber lands. A wild scramble ensued to buy all that was available. A great deal of money was made by those who bought only to sell; but those who bought to hold have been sadly disappointed in the profitless venture. The way these speculators have been forced by carrying charges to sacrifice their timber and so increase the rapidity of depletion has already been told.

4. Effect of Depletion on Lumber Prices.—The original great wealth in timber in the United States led to curious results in calculating costs of stumpage and hence of lumber. These assumed costs in turn influenced the price at which lumber sold. Stumpage values were seldom or never based on the cost of growing timber to the size attained by a given stand, but instead were calculated by the relationship between the supply and demand of timber gratuitously matured by nature. Inasmuch as the supply seemed limitless and the demand relatively small, timber lands, where they were not considered entirely as free gifts, changed hands at ridiculously low prices.

Examples of Timber Prices.—For example, a Philadelphian named Bingham purchased in 1793 a Maine tract con-

taining 2 million acres for 12½ cents an acre. The year before three New Yorkers, Alexander Macomb, Daniel McCormick and William Constable, bought 3 million acres in New York for 16 cents an acre. These shrewd individuals then influenced the legislature in 1794 to enact a law determining the minimum price of state forest lands as \$1.50 an acre, a law which made the gentlemen's forest deal almost as profitable as piracy. Again, in 1798 Colonel John Brown, one of the founders of Brown University, secured at a mortgage foreclosure sale 210,000 acres of New York woodland for \$1.57 an acre.

Between 1800 and 1900, thousands of acres of forest in the federal domain were sold for \$1.25 an acre. Thousands more were obtained as gifts from the nation or state to railroads, schools, and colleges. Still more thousands passed into private hands merely by filing on the land.

Effect of Timber Prices upon Lumber Prices.—With timber so little regarded, lumber costs were assumed to begin with logging and not with growing the tree. Consequently lumber prices were ruinously low, averaging from one-fifth to one-third of the price of similar grades in Europe. As an instance, between 1840 and 1860 soft woods sold in the east for \$20 to \$25 per thousand board-feet. This led to selecting only the best timber; for it cost as much to cut, log, and saw poor stuff as good. Furthermore, extremely reckless and destructive practices prevailed in the forests, four to six times as much wood being wasted as was finally put in the hands of the consumer. The latter, too, was extravagant in his demands in regard to quality, sizes, standard cuts, and quantity. Our per capita consumption of wood as compared with Europe, for instance, was disproportionately large; we used per person 17 times as much as the United Kingdom, 9 times as much as France, and 6 times as much as Germany.

But these were conditions that could not endure, for our consumption per year was from 3 to 5 times as much as our

forest produced per year. We have maintained our consumption only at the sacrifice of our capital, that is, we have cut over whole regions and have had to turn to new virgin timber areas to satisfy our demand.

Effect of New Regions of Supply upon Lumber Prices.—

In doing so we have periodically increased the cost of securing lumber, and hence have periodically raised the price level. Our earlier forests were in the regions of densest population, and had all the advantage of nearness to market. But the cutting areas have constantly retreated from the center of population. This is indicated below :

PERCENTAGE OF TOTAL UNITED STATES LUMBER CUT ¹

Date	Northeast	Lakes	South	Pacific
1850	54.5%	6.4%	13.8%	3.9%
1860	36.2	13.6	16.5	6.2
1870	36.8	24.4	9.4	3.6
1880	24.8	33.4	11.9	3.5
1890	18.4	36.3	15.9	7.3
1900	16	27.4	25.2	9.6
1914	9	10.5	47.7	19.3

RELATION CENTER CUTTING TO CENTER POPULATION

Date	Center Cut	Center Population
1850-1870	East	Eastern Ohio
1875-1900	Lakes	Central Indiana
1900-1914	South	Central Indiana
1914-1920	Pacific	Western Indiana

New Regions of Cut Increased Freight Charges.—The increase of distance between source and market has been accompanied by a change to a more expensive form of transportation. The earlier logging and lumber shipment was done by water, the later by railroad. Indeed at first, the whole log was carried to the final market where the sawmills were then located, a possible arrangement because the bark, edging, and trimmings, were sold for common fuel. But improvements in transportation and the use of coal fuel soon drove the mills

¹ Report No. 114, United States Forest Service 1917.

to the forest. Finished lumber then went by the New England rivers, Long Island Sound, the Champlain-Hudson route, or the Great Lakes and Erie Canal, to the great markets at Bangor, Boston, New York, Albany, Burlington, Buffalo, Tonawanda, and Chicago. This water transportation was seldom for long journeys and always at a relatively low charge, for it is estimated that equal rail hauls would have cost from two to ten times the water burden. As an instance log driving on the Kennebec River, Maine, costs one-fourth to 1½ cents per ton-mile, whereas the most favorable railroad rate would be 2.74 cents per ton-mile.

But what has happened in the Chicago market is indicative of them all; in 1875 Chicago received 81% of its lumber by water, while in 1913 only 9% came by that route. The increased cost resulting from change in the mode of transportation has been augmented by the much longer hauls. Prior to 1840 the average transportation charge was from \$1 to \$3 per thousand board-feet; by 1900 it had risen to \$9, and in 1920, so far as west coast lumber was concerned, it reached \$20. The freight rate alone on lumber now equals what the lumber sold for between 1840 and 1860. It is estimated that the Lake states, the leading producers between 1875 and 1900, now pay a lumber freight bill of 6 million dollars a year. That this situation will continue is indicated by the following table showing the location of our remaining timber supplies:

	Per Cent Total U. S. Forest Area	Per Cent Saw Total U. S. Timber
New England.....	5%	2%
Middle Atlantic.....	6	2
Lake States.....	12	5
Central States.....	12	7
South Atlantic and East Gulf.....	22	10
Lower Mississippi.....	17	13
Rocky Mountain.....	13	10
Pacific Coast.....	13	51

Stumpage Values Increased.—Timber depletion has added to costs in other ways besides those mentioned above.

Stumpage values have greatly increased. Although they do not represent the cost of growing a tree for a hundred years, more or less, yet they are far beyond the point where standing timber could be considered a free gift. For example, within twenty years certain Idaho lands have witnessed a tenfold increase in value, Wisconsin 32-fold, Alabama 35-fold, and one Alabama tract an advance of 59 times the original purchase price.

The cost of logging has gone upward because cutting is now pushed into rough, inaccessible country, and the wages and maintenance charges for logging crews have kept pace with other augmentations in the cost of living.

Capital equipment in the form of machinery has mounted progressively in the woods as it has in factories, but in the forest depreciation charges are greater than in workshops where the hazards are less. All of these things are reflected in lumber prices.

In addition the cost of wholesale and retail lumber-yard operation has had a startling rise because services demanded have become more detailed and complex. All of these factors combined tend to flatten our pocketbooks when we buy or use wood.

Effects of Increased Price of Lumber.—In so far as this added price of lumber has directly affected consumers, we are not here concerned although it may be illustrated by recent building construction. In Washington, D. C., a house was built in 1917 for \$6,250; in 1920 an identical house cost \$12,250. In St. Paul houses built from the same set of plans cost in 1915 the sum of \$4,240; in 1919 the price was \$7,724, and in 1920 had become \$11,820. A "ready-cut" house that sold in 1915 for \$883, had by 1920 become listed at \$3,272.

Nor are we interested in the changes wrought by high prices in wood-using manufactures such as the utilization of by-products, the interchange of waste products, the greater use

of preservatives and the development of the veneer industry. Our primary subject is the forest. What effects have high lumber prices had there?

Scientific Forestry.—One of the direct results is a greater interest in scientific forestry. Some private operators are now carefully protecting their holdings against fire, overgrazing, and thieves. They are using selective methods in their cutting, taking only those trees that are ripe for the axe. They are careful not to injure young trees and arrange their cuts so as to insure abundant reproduction. Trees are cut nearer the ground instead of 20 feet up the trunk as has been known in the past. The lower cut of course saves wood, although we have nowhere yet adopted the Harz Mountains practice of taking trees up by the roots in order to insure the fullest utilization of wood. Private owners too have been forced into co-operation with the national forests.

A second direct result is the working of areas for trees formerly despised. For example, in the northeast and the Lake states hemlock is being logged in large amount.

Reduced Consumption of Wood.—Indirectly the high price of lumber is reducing our per capita consumption of wood, and hence relieving somewhat the strain on the forests. Men want utilities, rather than specifically wood. For example, men go into the market to buy fencing, furniture, or packages; it is immaterial to many buyers whether the commodity be made of wood or wire, steel or pasteboard. Price and utility determine the choice between a wooden or a steel bed, a wooden or fiber packing case. So many substitutes have been created for former wooden articles and these substitutes have been so aggressively pushed on the market, that our national use of wood shows a decided decline. The following table² clarifies this point:

² Report No. 114, United States Forest Service.

Per Capita U. S.	Consumption of Lumber Board-Feet
1904	493
1905	494
1906	516
1907	504
1908	450
1909	473
1910	470
1911	442
1912	455
1913	436
1914	388
1915	375

That this curtailment of demand is reflected in the lumber cut is indicated by the following:³

Year	Cut of Lumber Thousands of Feet Board Measure
1904	34,135,139
1905	30,562,961
1906	37,550,736
1907	40,256,154
1908	33,224,369
1909	44,509,761
1910	40,018,282
1911	37,003,207
1912	39,158,414
1913	38,387,009
1914	37,346,023
1915	30,985,473

Further Progress Needed.—Despite this favorable reduction of nearly 25% since 1906, our cut is still far in excess of the normal growth and calls for continued effort for improvement. The forest operators need sounder methods of accounting and better financing. Since 60% of their costs are due to wages, they need to improve mechanical devices for forest use. Although the typical woodsman is highly independent, he ought to learn the value of co-operation with his fellow operators, especially in the matter of statistics, credits, accounting, employment, and merchandising. Finally, the logger should give greater consideration to getting full value from every

³ Report No. 144, United States Forest Service.

tree; at present 75% of the tree is wasted and only 25% marketed.

From the public point of view, extension of and improvement in the national forest policy is demanded. As a nation we should make our cut-over lands productive. Millions of acres unfit for agriculture or any other use are lying idle. These lands are cheap and could well be bought by the government and then planted with commercial trees. Unless some of these things are done by the private operators and the public, our present practices are steering us into forest bankruptcy.

CHAPTER VII

THE LOGGING INDUSTRY

Introduction.—Logging includes the cutting of trees in a forest, the sawing of trunks into logs, and the transportation of logs from the place where the tree fell in the forest to the mill where the logs are converted into lumber.

One individual person or corporation may own and operate all the divisions of the wood industry, from the forest itself to the retail lumber yard; or each division may be under the control of separate persons. Timber, logging, and mill work, however, are generally under one ownership and management.

Importance of Timber and Logging Industries.—Judged by the usual standards of measurement, namely, capital invested, number of wage-earners, and value of output, the extractive forest industry stands among the leaders in the United States. Agriculture and manufacturing can boast a higher capital investment, and a higher value of products, but the forest enterprises claim supremacy in the number of wage-earners employed.

The high rating in employment is due to the fact that the places and materials of work do not favor mechanical aids, so that there is great dependence on crude manual labor. The forest business is closely analogous to mining, not only in the large amount of hand work involved but also in its scattered isolated units and the weight of the materials to be moved. Curiously also, the two are about on a par as regards position in relative importance compared with other industries.

In many sections of the west and south, lumbering is the

principal industry. In Washington, Oregon, Idaho, Mississippi, and Louisiana about two-thirds of the wage-earners are engaged in this one business.

Importance Unrecognized.—The important position of forest enterprises in our economic organization is not generally appreciated because the units are scattered from Maine to Oregon, or from Mississippi to Minnesota. Many of them, too, are operated upon so small a scale as to escape notice and obscure their aggregate value. On the other hand, most other enterprises are concentrated where they may be seen, and their influence felt. Even mining has its towns, giving visible testimony to the position of the industry in our national business life.

Furthermore, timber cutting and logging are not directly advertised in papers or periodicals nor indirectly by means of news stories concerning the deeds and misdeeds of great companies. It is true that the romance of the woodsman's life has given it a place in fiction, but the books are necessarily localized in their action and thus give no vision of the national immensity of the forest industry.

Finally, the timber and log business suffers the obscurity that is always visited upon the commonplace. It is only the unusual that fixes attention or fires the imagination.

Organizations and Methods Vary by Regions.—The logging industry of the United States does not show a universal type of organization, or exact similarity everywhere in the methods of work. Indeed, each forest region is almost peculiar to itself in these matters. This individuality is due to differences in the principal trees cut, and the topography or the climate of the regions where the trees grow. It will be necessary, therefore, to treat each region separately, and in the order in which they entered the logging industry of our nation.

The New England Logging Industry.—Although Massachusetts, Rhode Island, and Connecticut have contributed to the industry, New England's claim to fame in the forest enterprises rests upon Maine, New Hampshire, and Vermont.

Period of Importance.—Cutting began with settlement in New England, for as early as 1623 a sawmill was built in Maine to convert logs into lumber. From that time to this, forest operations have been continuous. At first and until about 1870, only virgin white pine or oak were cut, but following this date a goodly proportion of the cut has been in second-growth timber. After 1880, when it was discovered that wood pulp could replace rags as a paper raw material, hemlock, spruce, and poplar, both virgin and second growth, were put to the axe and under the saw. Consequently the lumber cut of New England continued to increase until 1907 when it reached its maximum.

At this highest point, however, New England contributed only 7% to the national output, whereas in 1870 its share had been a third, and in 1850 a half, of the total for the United States. In 1918 the cut of New England was only 4½% that of the nation and supplied less than 70% of New England's own needs.

When one considers that 300 million dollars is invested in wood-using plants in New England, upon which 90,000 wage-earners are dependent, the situation as to raw materials is seen to be serious. At the present rate of exhaustion, New England will soon be forced to import over half of its wood raw materials, and within twenty years all timber will be gone except farmers' wood-lots, a few stands of second growth, and the relatively small forests contained in the White Mountain national forest and the state forests.

Season of Work.—Since a good deal of the capital and labor for exploiting New England's forests came from among

farmers, work in the woods was confined to the winter season alone. In fact logging was, for years, largely a by-time job for farmers. During the last half century, despite the fact that much of the lumbering has been independent of farm capital and labor, nevertheless it has continued to be a winter job.

Transportation.—This is due to the fact that the north-woodsmen had to rely upon nature's aid for transportation. The summer forest-floor is little fitted to render assistance in haulage; indeed it is quite the contrary. But the snow-covered ground of the winter makes it easy to pull enormous loads, especially since the surface of roadways could be iced and the curves as carefully banked as those of a railroad. On this snow and ice traction surface, oxen at first furnished the motive power. The change from oxen to horses was hailed as a remarkable advance because so much time and labor were saved. Of late, notably along the Kennebec, steam and electric haulers have displaced horses and some heavy tractors are also employed.

A second reason for logging only in the winter was the necessity for using spring floods to transport the logs from the forest to the mill. Logs piled along the banks of streams were pushed or floated onto the crest of spring floods and so hurried to the mill at minimum cost and time.

Although any reasonably strong healthy man might work in the woods in the winter, only the young, vigorous, alert, and hardy ever dared risk the river drives; for the riverman's job was far more hazardous than a soldier's in war. The banks of Maine rivers are graveyards for loggers who perished in the spring drive; one little section of the Penobscot has forty mounds commemorating young men who went down under the logs plunging through the swift waters. In the summer the log crews both from the woods and river either went on to farms or worked in the sawmills.

Labor.—Originally, since most of the labor used in New England logging came from farms, it was predominantly American. Today, however, only about 40% are Americans either by birth or naturalization. Finns and Poles make up about another 40%, Russians and Austrians constitute 15%, and Canadians the remaining 5%.

Market for New England Forest Products.—Early cutting was for local consumption, shipbuilding, and export. The homes of the first generations were constructed of the best virgin timber. Fuel, furniture, or household utensils came from the same source. Since the Maine trees were especially valuable for ship timbers and masts, the ports of New England early attained fame for their shipbuilding. At the time of the Embargo Act, Boston owned one-third of the shipping of the United States, almost all of it the product of New England yards. Even as late as 1903, of the ninety-six full rigged ships in the United States Navy, sixty had been built in Maine. The wood exports were ship materials, barrel parts, lumber, and potash. That the export of lumber was not without profit is indicated by the records of a voyage of one Partridge who loaded his ship with Maine lumber for \$1,500 and sold it in Lisbon at a net profit of \$8,000.

By 1870, when most of New England's virgin white pine was gone, the section had become the nation's principal manufacturing center. The lure of the mills had caused farms to be abandoned, a movement that was augmented by westward emigration. The deserted lands often reverted to forests. These together with second growths rising in cut-over lands furnished the forest operator with materials after the pine disappeared.

By 1880 this second forest era was in full swing but the market had changed along with the quality and species of wood. Fuel, packing-cases, matches, toothpicks, spools, and the like, made up the consumers' demand, while the supply

came from the low-grade pine, hemlock, spruce, poplar, and white birch.

During the last thirty years the paper mills have been the main support of New England's forest operations.

Middle Atlantic Forest.—Except for minor details, the story of the Middle Atlantic Forest is similar to that of New England. Virtually the whole of New York State was once covered with a forest of pine, spruce, hemlock, and hardwoods, and the lumber industry was one of the first to develop. Although it reached its highest volume in 1840, New York was still the nation's premier lumber state in 1850 when it cut one-fifth of the lumber of the whole country. The decline from this high point started at the time of the Civil War and has continued, until in 1920 its rank was twenty-fifth and its cut only 1% of the nation's whole.

New York has been the greatest single contributor to wood pulp for newspapers, accounting for about half the entire product. But today 60% of New York has no timber, and of what is included within the state 60% is in public forests which cannot be touched because of a provision of the state constitution.

Our national newsprint consumption has increased from a per capita of 3 pounds in 1880, to one of 33 pounds in 1919. It is significant that no important additions have been made to the capital invested in American pulp mills in the last ten years, while American capital is responsible for an increase in Canadian pulp mills since 1909 of 433%. The pulp mills of New England and New York will soon be faced with the necessity for removal to Canada, the Rockies, the Pacific Coast, or Alaska unless a new raw material is discovered.

Pennsylvania, whose very name suggests the forest and whose first city, Philadelphia, was literally carved out of the woods, followed New York, standing first among the lumber states in 1860; but by 1870 Pennsylvania began to import

white pine from Michigan. Most of Pennsylvania's remaining resources is in hardwoods. The present total cut is only 60 board-feet per capita, or about one-fifth the average per capita consumption in the United States. Williamsport, whose first sawmill was built in 1838 and which at the height of its prosperity boasted fifty mills, now cannot claim a single one.

The Lake Forests.—The Lake states have repeated the story of New England and Middle Atlantic forests, beginning with a single sawmill in 1832. Leadership passed from state to state beginning with Michigan in 1870 and ending with Wisconsin in 1900, the peak for the whole area coming in 1892. In 1920 only a third of the cut from the Lakes region was white pine, this tree, as in the east, being succeeded by hemlock and various hardwoods. Michigan, which from 1870 to 1895 cut more white pine than any other place in the union, now actually produces less than half as much as Massachusetts. The Lake states already consume an amount of lumber equivalent to 70% of their own output, and by 1925 will use as much as they cut if the present tendencies are maintained. Much Pacific Coast lumber is already sold in the Lake district.

Labor.—The labor for Minnesota and Michigan forests is recruited almost to the extent of 50% from the mines. This accounts also for the high percentage of foreigners engaged in this work throughout the Lake region. The figures are as follows:

Finns.....	35%
Scandinavians.....	20
Americans.....	15
Austrians.....	15
Germans.....	10
Poles.....	5
	<hr/>
	100%

The Southern Forest.—The Southern Forest has two main divisions, one the South Atlantic and East Gulf, the

other the Lower Mississippi district. These two areas were developed in the order named.

The Atlantic and Gulf Forest.—The Atlantic and Gulf section shows several marked contrasts to the Northern Forest. The characteristic tree is the yellow rather than the white pine, a difference toward inferiority since the yellow pine is not of the highest grade although a useful and valuable wood.

The geographic location of the yellow pine forest has rendered imperative a change in logging methods. The absence of snow prohibited the pulling of sled-loads of logs with horses, and the presence of deep sand militated against horse-drawn wagons. However, the generally level topography made railroad building easy, and since there was no seasonal bar to continuous year-round operation, a logging railroad could be made to pay. As there were few streams available for log-driving, the forest railroad was connected with trunk railroad lines along whose right-of-way log "yards" were constructed. Continuous operation offsets in a measure the more expensive railroads as compared with the cheap snow-ways of the north.

In addition, the employment of men through all the twelve months saves the losses due to disorganization of the labor force common in the north. Normal family life in the forest is also made possible, and the familiar log camp of the north is replaced by light board shacks, the climate not being severe. In fact a light portable forest town is set up in the center of the cutting area. Some operators house their employees in box cars fitted out as cabins.

The laborers in the Atlantic forest operations are 80% negroes. The remainder are nearly all American-born whites. There are almost no foreigners in this forest region. The Gulf region has a few foreigners sprinkled through the labor force, among whom Mexicans predominate, but this region also depends upon negroes for 80% of its labor.

Market for Atlantic and Gulf Forest Products.—The yellow pine forests had been exploited for turpentine and resin since the earliest settlement, the center of production passing from the Carolinas to Georgia, then to Florida, and recently appearing in the lower Mississippi Valley.

But the extensive development of the yellow pine forests for lumber began in the seventies. At first except for local shipments by water from Maryland to Baltimore and Philadelphia, the market for the yellow pine was in the corn belt states, competing with white pine from the Lake states. In the nineties the demand for yellow pine spread to all the lumber markets including the east and the Lake states themselves, and by 1900 yellow pine was the leading soft wood cut in the United States.

Although the peak of production was reached in 1909, yellow pine is still the most important single factor in the lumber cut of the nation, furnishing almost half of all soft woods and more than a third of all woods. Four-fifths of the original yellow pine stand has already been felled, and what remains is being logged three times as fast as it is grown. Taking into account the agricultural and industrial development now inaugurated in the south as influencing a probable greater local demand for lumber, the south probably in ten years will have no yellow pine to export from its own region, or otherwise must balance its sales with purchases from other regions.

A Unique Forest.—In 1812 there was discovered a unique forest near Dennisville, New Jersey. This small forest was buried in a swamp. It was supposed to be a relic of an ancient cedar forest, dating far back in geological times, that had been preserved by partial immersion. Trees were fished out of the buried debris in the swamp from 1812 to 1880 and were manufactured into shingles and lumber. The deposit was large enough to yield an output of shingles worth \$10,000 a year.

Lower Mississippi Forest.—The forest of lower Mississippi has two divisions, due to topography. Since the valley is a delta and continually experiences overflows from the river, the center of the valley at the river is higher than ground east or west of the stream. On the slopes near the river are the local farms. At the bottom of the slopes are vast swamps covered with great forests of cypress and hardwoods. East or west of the swamps the ground gradually slopes upward into sandy ridges. There the yellow pine predominates, similar in every phase of its industrial history to the pine of the South Atlantic.

The swamps, however, present a new characteristic. Snow, horses, and railroads are all alike impossibilities for logging; resort must be made to canals and boats. Large boats anchored at a convenient point become the "log yards." Radiating from this central point small canals penetrate the swamp. On the canals small boats are stationed. When a tree is cut in the swamp, it is snaked to the nearest canal by a cable to the large yard-boats.

The logging crews live in house-boats with their whole families and work the whole year. Since the labor is in a semi-tropical swamp in a region of heaviest rainfall in the United States, 60% of the laborers are colored. The rest are white Americans.

The swamp forests were exploited by the early Spanish and French rulers of the lower Mississippi Valley. The swamp output reached its maximum in 1913. It is estimated that the cut will be finished within fifteen years.

The Central Forest.—In the southern Appalachians, and in the southern sections of Ohio, Indiana, and Illinois together with the Ozarks, is a forest region almost unique in the United States in that it consists of hardwoods. Originally the terms "hard" and "soft" indicated physical properties of wood, but they are no longer exact in that sense. Today the terms more

nearly differentiate the trees that shed their leaves and the evergreens which do not lose foliage in winter.

The hardwood forest was nowhere established in pure stands of one species, but mixed oak, chestnut, walnut, cherry, hickory, basswood, and the like, and even included soft woods such as white pine and hemlock. Most of these hardwoods were used for furniture, vehicles, implements, and posts, ties or fencing. Some of them, chiefly oak, chestnut, and hemlock, having a bark high in tannin, have been utilized in the leather industry.

For the most part, the hardwoods have been distributed among a large number of owners so that small-scale logging operations were more general than in other forest regions. The methods used were as various as the owners, and call for no special comment.

Labor.—The labor for these hardwood operations has been recruited from the “poor whites” of the mountains and consequently is 85% American. No other forest area has anywhere near so many native citizens enrolled in the lumber industry. Besides these white Americans there are Italians, Austrians, and Swedes who constitute, together, 10% of the working forces. The remaining 5% is made up of negroes.

Disappearance of the Central Forest.—The original Central Forest as a whole was unsurpassed in quantity for hardwood anywhere in the world. Sixty million acres or more is the estimate of the quantity once present. But hardwood grows only in good soil, and as the land had a higher value for agriculture than as forests, much wood was sacrificed to make farms. Recently a blight has visited the chestnut trees and threatens to eliminate that species. Cutting has proceeded in this forest as rapidly as any other, but with this difference—the drain has been less to supply lumber than to provide tanning extract, poles, ties, cooperage stock, fuel, mine props, and

other products. About four-fifths of the original forest has been removed, but in the mountainous districts much second growth of inferior quality is now available. Within twenty years entire dependence will have to be placed on this inferior second-growth material, all of it in the southern Appalachians.

The Rocky Mountain Forest.—Because of the character of the country, its altitude, rainfall, and dissection, the Rocky Mountain Forest is unevenly distributed and discontinuous. These facts are shown below:

LOCATION TIMBER STAND OF ROCKY MOUNTAINS

Montana-Idaho.....	60%
Arizona-New Mexico.....	18
Colorado.....	11
Scattered.....	11
Total.....	100%

These same facts have made logging difficult, for most of the timber was high up on sides and tops of mountains interspersed with deep tortuous valleys and open cup-like depressions. None of the usual logging methods being available, resort was made to chutes and, where water was present, to flumes. Some of these are 40 miles long and cost as much to build and maintain as railroads.

The trees are mostly Douglas fir, western yellow pine, lodgepole pine and larch, all soft woods. They were cut first in the early fifties, chiefly to supply mines with props or fuel; even today the local mines are the largest buyers, although much lumber is shipped to the Mississippi Valley and the east. The region is still in its youth so far as cutting is concerned and each year witnesses an increase in production. At present about 5% of our national product is cut in the Rockies. None of the Rocky Mountain states, however, are self-sustaining in lumber raw material except Idaho and Montana, and any future importance of the region will depend upon these two

states. Much of the Rocky Mountain Forest has been put into the national forest system.

Labor.—The diversity of the Rocky Mountain Forest areas is also shown in its labor forces. In the northern section, about 60% are Scandinavians, 10% Canadians, and the rest Austrians and Americans. On the other hand, the southern section has about 60% American-born white labor and the remainder nearly all Scandinavians.

The Pacific Coast Forest.—The last great timber region of the United States is the Pacific Coast where almost a third of our remaining forest now stands, containing half of the national supply of saw timber. The first west coast sawmill began operations on Puget Sound in 1845 and within ten years lumbering became the principal industry in western Washington. The business was local until 1894, when the Hill railroads reduced rates to Minneapolis and Chicago and started Pacific lumber upon the way to national fame. Washington became the leading lumber state in 1905 and except for 1914—when Louisiana overtopped it—has maintained that position.

Douglas fir is the leading tree in west coast forest operations, although half a dozen other soft woods contribute in aggregate as much or more to the axe and saw. In northern California along the coast the unique redwood is found.

The logging operations resemble those described above in connection with the Rocky Mountains. They are made more arduous by the fact that undergrowth is more jungle-like on the western slopes than is common anywhere else in the country, even in the Rockies.

Aside from topographical and biological difficulties, the west coast woodsmen have to grapple with the problems raised by the enormous size of the trees they cut. Nowhere in America have climate, rainfall, and altitude so happily combined to produce such forest giants. But even the great trees

of Washington or Oregon look small beside the Big Trees of the California mountains. Some of these are the oldest living things in the world. Calculating their age by the rings of annual growth, these trees were large, hale, and hearty although even then old in the days of Pontius Pilate. The most ancient of them have been brought under the protection of the national government and will never be felled wantonly to build fences or provide bonfires.

Labor.—This section depends upon Americans for its woods force of laborers up to about 60% of the total. Besides Scandinavians, Canadians, Finns, Austrians, and Germans, there are a few Japanese laborers scattered through the camps in this area. Both here and in the Rocky Mountains the labor is given to radicalism, and many ardent supporters of the I. W. W. are found among them. This is partly due to the harsh conditions in the camps and partly to association with like-minded mine labor in the neighborhood.

Disappearance of the Pacific Coast Forest.—As a nation we have not yet learned to profit by our experience, for in this last large forest we are cutting trees three and a half times as fast as they grow. Washington is losing faster than Oregon because the former has its forests in more accessible locations. California, though a large exporter, uses as much as she sells and probably has merely balanced exports with imports during the last forty years. How long Washington and Oregon can take care of their own needs and yet furnish the rest of the country with wood raw materials no man can say, but no estimates predict more than fifty years of life for the privately owned forests. Fortunately there are great state and national forests in the region that will be managed for perpetuity.

Timber Ownership: Public.—Before 1891, all of our forests were either actually in private hands or were open to

exploitation by private individuals. But the creation of national forests set up two types of ownership: private and public. Of our present standing timber about one-fifth is under public ownership and control. Almost three-fourths of this publicly owned forest is in the Pacific Coast region, while about a fifth is in the Rocky Mountains. Only a little more than one-tenth is in the east, located in the Adirondacks, the White Mountains, and the southern Appalachians. However, both the national and state governments are adding to the eastern public forests by purchasing cut-over, waste, or swamp lands, and promoting tree growth upon them.

Timber Ownership: Private.—But regardless of their size or importance, our public forests are insignificant compared with those owned by private citizens. Four-fifths, or 80%, of our timber land is private property. The owners are numbered by thousands and the acreage by millions. Curiously, however, most of the thousands of owners can claim but a few hundred acres each while a few owners hold title to the remaining millions of acres.

Concentration of Ownership.—Of the small holders most (about 95%) are east of the Great Plains, the farmer with his wood-lot being the conspicuous type. The only large timber acreages in New England have been consolidated to secure large supplies of pulpwood. Fifteen owners control about half of the pulpwood of New England. Sixty per cent of the southern cypress is in the hands of 25 holders. The 29 largest holders of yellow pine control but 22% of the total, while large owners are conspicuously absent in the Central hardwood forest. On the other hand, the Lake states show a remarkable concentration of the most valuable species, for 6 owners held 54% of Minnesota's forest, 10 owners held 24% of Wisconsin's, while 28% of the timber of Michigan is owned by 12 individuals (persons or corporations).

The most prominent of the large holders claim their possessions in the Rocky Mountains and along the Pacific Coast. Three large corporations, namely, the Northern Pacific Railroad, the Southern Pacific Railroad, and the Weyerhaeuser Timber Company, between them hold 11% of all privately owned timber in the United States. The railroads obtained their forest lands as part of the grants made to them when the lines were projected, although the original acreages have been modified by additions and subtractions. The Weyerhaeuser Company secured its forests by purchases, trades, and settlement. Thirty-seven holders own a fourth of all private timber and 250 own a half.

This limited control of a great natural resource is still further concentrated by community of interest among the largest owners, and by the strategic location of their holdings. Not only is the most accessible timber held by them, but their lands are so arranged as to block others from admission to natural outlets. The control of the large holders therefore extends far beyond the rights inherent in their own property, and the continued depletion within each forest region enhances the degree of concentration because generally the smaller holdings are exhausted first. Yet strangely, these facts do not establish a case for timber monopoly. The industry is fiercely competitive.

Industry Competitive Nevertheless.—This is due first of all to the large number of small holdings in each region; Washington and Oregon alone have 24,000 such titles. The large number defies any attempt at concerted action for selfish purposes. Each region, too, offers competition between widely held inferior species and concentrated superior ones. When a region begins to decline, or when cutting species are not found in stands, large-scale operation is not so efficient as small, which offsets one of the reliances of monopoly.

Between regions there is a continuous war for the control

of common markets; thus the Southern, Pacific Coast, Rocky Mountain, and the dying Lake regions, all struggle for the middle west consumers. Traditionally forest operators are a highly individualistic and independent set of men, and this characteristic makes it difficult to organize an enterprise that depends on co-operation.

Outside of the lumber industry, makers of wood substitutes have made serious inroads upon the forest trade and most effectively prevent lumber prices from reaching "all the traffic will bear."

Our national forests, although constituting only a fifth of the total timber, nevertheless check and balance untoward movements in the other four-fifths. Finally neighboring countries—Mexico, and particularly Canada, the world's second largest lumber producer—could seriously threaten any timber monopoly that might arise in the United States.

The result of the foregoing is that despite concentration of timber ownership within regions there are few industries so highly competitive within the nation. Indeed, since the competition is conducive to depletion and waste of the forests, it is a questionable virtue. Of the two curbs to it—increased private monopoly or more national forests—there should be no hesitation by the public in favoring the latter.

CHAPTER VIII

THE ORGANIZATION OF RAW MATERIAL MARKETS

Place of Marketing in Economic Organization.—

Farmers, miners, lumbermen, manufacturers, and fishermen are said to be producers, while all of us in taking the products of these groups to furnish ourselves with the necessities or luxuries of life are called consumers. As a result, economists in explaining the features of the activities of producers and consumers arrange the factors in two classes, one known as production, the other, consumption. The principal elements entering into production are materials, capital, labor, and business management, each of which requires some form of reward for the services rendered.

To account for the division among these various elements of the results of their joint endeavors, the economist coins the word "distribution" as a term to denote the whole field of apportionments. Unfortunately the public is not acquainted with this technical use of the word "distribution" and therefore fails to understand the economist when he says that marketing is not a part of distribution but of production.

To the ordinary person distribution and marketing are interchangeable terms, but to the economist they stand for distinctly different things. Marketing raw materials changes their place or time of usefulness as well as involving a shift in ownership, all of which add to the value of the materials as much as their change of form when manufactured. Consequently the economist claims that marketing is as inherently a part of production as manufacturing, farming, mining, fish-

ing, or logging. For example, the production of strawberries does not end with the farm, but includes all the processes by which the berries reach the consumer kitchen. Similar reasoning may be applied to the marketing of other raw materials, and when generalized justify the economist's classification.

Causes for Marketing Organization.—If all producers were within easy contact with consumers there would be no need for an organization of marketing; indeed in primitive social groups there is none. But the specialization of effort that has marked the progress from savage societies to civilization has gradually widened the gap between producers and consumers. The adoption of money crop agriculture with its adaptation to conditions of soil and climate, the industrial revolution in manufacturing, the amazing advance in transportation and communication facilities—all of these have tended to break down the coincidence or close association of producers with consumers. Sometimes the severance of relationships constitutes merely a change in trade channels such as occurs when a farmer takes his butter to the village store instead of selling it directly to his neighbor; or the breach between producer and consumer may be one of physical distance occasionally measured by the diameter of the earth, as is the case when Hawaiian pineapples are sold to Yale boarding-house keepers.

But despite new trade channels or physical distance, producer and consumer must be brought together, if not by older direct methods, then by newer indirect means. Simplicity or complexity, directness or indirectness of the means are determined by the compactness or dispersal of producers on the one hand, and similar concentration or expansion of consumers on the other. For each raw material a marketing organization has been brought into existence shaped to the peculiar conditions as to producers and consumers concerned with that commodity. Marketing therefore is a response to modern

civilization, and provides a means of joining production to consumption.

Advantages of an Organized Marketing System.—

Although the marketing organization, because of its indirectness, sometimes is responsible for maladjustments of production and consumption, and also is charged with enhancement of the cost of living by reason of the multiplication of middlemen, nevertheless it may be credited with many advantages. In the first place it alleviates local gluts or famines by adjusting regions of surplus to those of deficit. It permits the tapping of widely divergent sources of supply, and equalizes consumption through all the seasons despite highly concentrated seasonal production. It arranges for grading to suit various tastes or incomes. Bulk shipment at low rates is made possible by the concentration of commodities in markets, while the marketing system materially aids in the ready financing of commodity producers and handlers. Prices, too, are equalized over wide areas by the system we have built. One-industry regions would be impossible if there were not a marketing system bringing to the regions the things they lack; nor could the one commodity the regions boast be made available without a marketing organization.

Consequently the marketing system, as it is, constitutes a bulwark of modern civilization. This statement does not mean that the system is perfect, or that there is no need of closer adjustment to the requirements of both producers and consumers; it is only an evaluation of the system's present worth.

Since marketing, in the case of agricultural products, is both most complex and best developed, we will describe that first, and in the most detail. We can then indicate wherein the marketing of mineral and lumber products differs.

The Marketing of Agricultural Products.—Farm products reach consumers through four marketing mechanisms:

(1) the direct sale, (2) the local market, (3) the primary market, and (4) the retailer. Each of these we will discuss in turn.

1. Direct Sale.—Whenever a farmer sells his produce personally to the consumer, there is a carrying over into modern complex life of the simple relationship that once was general. Farmers sell to one another; thus a farmer with surplus hay may sell it to one neighbor and then with the money obtained buy potatoes from another. Or a farmer may load a wagon with vegetables or fruit, drive into the nearest town, and sell from his wagon to housewives. If there is a cannery in the village the farmer may take his produce directly from the field to the factory. A similar simplicity marks the business relationships between some farmers and some creameries, tobacco factories, cotton factories, flour mills, or slaughterhouses. If there is a city near a farm, the farmer may cart his produce to a wholesale or retail market in the city. Finally, the farmer may not leave his land at all, but sell his products directly to consumers by parcel post. This method is frequently used to market butter, eggs, and dressed poultry.

2. Local Market or Country Shipping Point.—But for the most part these simpler forms of selling are given up because they waste the farmer's time and may result in failure to dispose of his wares at a profit. The next step toward a more complex system of marketing is taken when a farmer carries his stuff to a local storekeeper and disposes of it in exchange for groceries or dry goods—or for cash. The storekeeper in turn may sell the produce to his own customers, to a local agent, or ship it together with other items to a primary market.

In the grain districts of the middle west the local market contains one or more grain elevators. These may be owned through a co-operative association by the farmers themselves;

they may be owned by local capitalists; or they may be part of a series of such elevators located along a line or system of a railroad and owned by one group of men at the primary market. The local elevator usually pays the farmer cash for his grain, the price being that of the primary market less transportation charges. The elevator stores, sorts, cleans, and grades the grain, but so much of the work is done by automatic mechanisms that the country elevator ordinarily operates on a charge of 3 cents per bushel handled. Since large volumes may be handled at less unit cost, some large elevators operate for little more than 1 cent per bushel. About half of the grain crop of the nation leaves the farm and nearly all of this half passes through local elevators. The co-operative elevators have an advantage in operating at cost, and with assured good-will; while the "line" companies have superior marketing facilities because of the volume of their business, better trade information, and special concessions both by the railroads and the primary markets.

In the cattle regions local buyers and agents of packing houses take the place filled by elevators, although the railroads themselves usually provide the small "yards" for holding the cattle until shipped. In the cotton industry, gins and more particularly cotton warehouses are a corresponding local market feature. The co-operative feature is represented in the cattle business by "shipping associations" and in the cotton business by "growers' unions."

In the local tobacco market there are warehouses, some co-operative, some locally owned and some units in a chain. For nearly every important agricultural product extensively grown in special regions there is some such local market service.

Functions of Local Market.—All these marketing devices perform similar functions. They all provide temporary storage, they all sort and grade their own particular commodity,

they all afford facilities for getting goods easily from wagons to platforms and thence to cars, they all concentrate scattered purchases into carload lots and some furnish special packages or containers. The principal advantage of the local market to the farmer is that it gives him a ready cash buyer near at hand. For instance, the average distance of wheat fields from local markets is 9.4 miles, and of cotton fields 7.9 miles. The disadvantages arise from the presence of too many or too few buyers, together with the buyers' superior knowledge of general market conditions and prices.

Prices in the Local Market.—The price paid in the local market is generally the current price of the primary market less forwarding charges. If the owner does not sell for cash in the local market but uses the facilities of the local market merely to forward his stuff to a central market, then the price varies according to the place and manner of delivery, and whether or not shipping costs are included.

Thus the farmer may sell his wares "to arrive," in which case the transaction is made before the goods reach the central market but payment is withheld until arrival at the market where the shipment is to be inspected, graded, and weighed. Such terms as "on track," "in car," and others like them signify sales at the central market after arrival but before unloading. Sales made "in store" are from products previously housed in warehouses or elevators. If the purchaser agrees to pay shipping costs, the transaction is called "f.o.b." which means "free on board"; that is, the farmer delivers his produce on a railway car but from that point assumes no charges. On the other hand, if the shipper agrees to pay freight and insurance, the transaction is called "c.i.f." (cost, insurance, and freight) and the seller receives only net prices.

Haulage.—Haulage from the farm to the local market, and through the local market, is done by the farmer himself

or by individuals and companies who make this their special business. Likewise at the central market haulage may be performed by a belt line railroad, by the teams and trucks of the various middlemen, or by transfer companies.

Sales.—Sales are made in three ways. According to the first method the goods themselves in bulk are the basis for the transaction. Livestock, fruit, and vegetables are sold in this way. The second form of sale is by sample—the usual method for selling cotton and grain. The third method of sale is by description, a method which involves strict adherence to grading, and honesty in business methods.

The first method is the most antiquated and costly but most usual, while the third is the most modern, cheap, and desirable but most limited in its application. Marketing progress is indicated by the relative decline of the first method and the relative increase of the third. The second is a mere go-between and is not only wasteful but lends itself to gross dishonesty.

3. Primary Markets—Central or Terminal.—The primary market in part does for the local markets what these in turn do for the farmers; but in part the central market has facilities and functions that are peculiar to itself. Gigantic elevators, stockyards, or warehouses are familiar sights in the central market. These store, sort, mix, clean, scour, grade, and package the commodities they handle, differing from the local market principally in the volume of the transaction. The total elevator capacity of Chicago exceeds 60 million bushels, Minneapolis 40 million, Duluth 30 million, Milwaukee 15 million, St. Louis 12 million, and Kansas City 11 million. Local markets measure their elevator capacity by hundreds or thousands of bushels, not millions. Oftentimes carload or trainload lots of articles never go to one of these storage facilities in the central market but are bought and sold in the cars in the railway yards. After selling they may then go to a storage

house but also may be forwarded immediately to the next "middleman" in the marketing chain, whether a factory, a retail store, or a secondary or seaboard market.

Cold Storage.—One of the special facilities more often found in the primary than in the local market is the cold storage warehouse. Butter, eggs, fruits, berries, vegetables, and even meats are all highly seasonal in their production on the farm, and likewise quickly perishable. For example, eggs are produced in largest quantities in April, May, and June; butter in June, July, and August; and fruits from June to October. Without cold storage these things would glut the market in the season of production but leave the market bare in other seasons. The cold storage warehouse therefore acts like a reservoir impounding the commodities at their flood and releasing them gradually in the season of scarcity.

This system, first extensively established about 1880, enables the farmer to plant, harvest, and sell larger crops of a given commodity than would be the case if he had to sell all he produced in one short season; it also enables consumers to get a given article during a greater number of months. The system is beneficial to public health for it is carefully regulated and inspected. Food must be in good condition when it enters storage, and the holding period is definitely limited. Separate rooms are provided so that each commodity will receive just the right degree of refrigeration to insure its fitness as food and to arrest decay, ferment, or the growth of bacteria or larvae. Prices, too, are equalized during the whole year, never reaching the possible peaks or troughs that would characterize them if there were no cold storage plants.

Of course, the system is subject to abuse whereby the warehouse corners a commodity and holds it for the highest prices. The speculative risk in this practice is so great, however, that its indulgence is seldom deliberately chosen by the cold storage managers.

Central Market Middlemen.—Aside from the cold storage warehouse the primary market differs from the local, in that it is a distributive as well as a collective agency. Therefore the primary market contains a much larger number of handlers of goods. Middlemen, great wholesale dealers and commission men, continue the collective features of the local market operators, but they also begin the opposite process of breaking up large lots into smaller ones and sending them on toward consumers by way of other middlemen.

The first of these central market middlemen is the jobber. This man handles special lines or special grades and sells them to retailers or factories.

The broker is another intermediary who may or may not buy and sell outright in his own service but usually is an order taker from consumers—factories, stores, and individuals—and an order giver to jobbers, commission men, or wholesalers.

A commission man primarily receives goods from farmers or local markets on consignment; that is, he does not buy them, but takes them for sale, charging a fee or commission for his services. He may also act as a broker, or wholesaler, thus obscuring his function as a commission man. Because such a combination of functions permits actual or seeming dishonesty, the general group of commission men frown upon and try to discourage it.

Auction companies are yet another feature in seventeen of the primary markets. They furnish storage and sampling facilities together with established hours of sale and experienced auctioneers. These houses are usually employed for highly perishable products such as berries, fruits, nuts, and vegetables which would be ruined by passing through the slower channels of trade—wholesaler, jobber, or broker. The fact that the supply and consumption is a daily matter together with the ease of standardizing grades and packages, aids in maintaining the auction system for these articles.

The Exchange.—The most unique mechanism of the primary market is the “exchange.” There are exchanges in the principal primary markets for grain, cotton, livestock, tobacco, fruits and vegetables, butter, eggs, and milk, wool, coffee, and raw sugar. An exchange provides an organized market place where buyers and sellers may meet and trade. Nearly all exchanges are partly concerned with actual bona fide sales and purchases and partly with speculative transactions, but some are specifically limited to the former and are then called “spot cash exchanges.”

In connection with an exchange either as an integral part or operated separately by private individuals, there is often an agency for the collection and dissemination of trade information not only as to prices but as to all other matters that affect crop production and rate. As to prices the quotation arrived at by the day's trading on the exchange is the guide for all transactions in the commodity from the farmer to ultimate consumer.

The quotations from all the exchanges in the same product tend to be the same, since operators buy in the exchange where prices sag and sell where they bulge. This trading between exchanges is generally purely speculative but it has the beneficial result of equalizing prices everywhere. When it is known that there are sixteen primary markets for grain, thirteen for cotton, fourteen for livestock, and eight for wool, this equalization is seen in its full importance.

All dealing is done by the exchange members between themselves; the exchange itself is merely a regulative organization laying down the rules of trading and fixing the penalties for infractions. Some exchanges are quasi-judicial, providing committees to adjust disputes; the decision of the committee is backed by penalties in the exchange and sometimes is enforceable by the regularly constituted courts of law. Buying and selling on the exchange is continuous but usually

for future delivery. This has the effect of regulating and stabilizing prices. It has an especial usefulness to manufacturers and contractors, for it enables them to enter into business agreements maturing in the future with considerable assurance as to the price of raw materials. In this connection the practice of "hedging" has arisen.

Hedging.—What is known as "hedging" may be made clear by an illustration. Suppose a flour mill in October contracts to deliver 10,000 barrels of flour in June. Since this flour will be made in May, how can the miller guard against fluctuations in wheat prices between October and May? One way, of course, is to buy the wheat in October and store it until May, but if a flour mill did this on all orders, it would have to go into the elevator business on an extensive scale.

But the exchanges are selling wheat for future delivery, so the miller in October buys enough wheat for May delivery to fill the June flour order. Since the flour contract is made on the basis of the speculative May price, it makes no difference to the miller whether the actual May price is higher or lower than the one at which he ordered wheat in October. The miller hedged his flour sale by a wheat purchase.

But take another case somewhat more complicated. An elevator buys wheat in October for 90 cents. It knows that it will cost half a cent a month to carry this wheat in storage until May, so in order to insure itself of a profit it sells in October for May delivery at a price of 95 cents a bushel; but not wanting to wait until May to unload its elevators of actual wheat, it plans to hedge in February. If in February the cash price of wheat falls to 88 cents, then the May price quoted in February will probably be 90 cents. The elevator company then in February will buy May wheat at this price and sell an equal amount of cash wheat for the February price. The company's books will then show four transactions which appear as follows:

BOUGHT		SOLD	
Cash (in October).....	\$0.90	May (in October).....	\$0.95
May (in February).....	.90	Cash (in February).....	.88
	<hr/>		<hr/>
	\$1.80		\$1.83

On the four deals the company shows a profit of 3 cents a bushel. If it had not hedged, then the books in February would indicate a loss of 2 cents a bushel besides the carrying charges from October until February. The first purchaser of May wheat in October at 95 cents will probably hedge in February too, for the gap in price between February and October is larger than normal. Without hedging buyers and sellers for future would stand to make or lose large amounts due to price fluctuations, but by hedging speculation is reduced and business made more stable.

Trade Association.—In addition to exchanges, there are trade associations whose functions are confined to one trade or closely allied trades but whose activities are not limited to one primary market. Such organizations as the National Grain Dealers Association, the National Poultry, Butter and Egg Association, or the National League of Commission Merchants, are cases in point. These associations are not particularly concerned with buying and selling directly, but furnish information about freight rates, railroad practices in shipping, or state and federal legislation. They bring organized pressure to bear upon the settlement of claims, and in legislative matters that affect their own business, as well as standardizing trade practices and improving market conditions.

Inspection.—Another special feature of the primary market is the care taken for inspection of commodities. In some of the markets, for example, those for grain, the states insist upon a rigid inspection of grain in the cars; in others, as in the case of livestock, the federal government regulates the inspection. In both cases the inspection is to insure maintenance of

standard and to guard against disease or quality lowering pests. In addition the local and national governments regulate the grading of certain commodities, as for instance, grain and cotton.

Commodity Banks.—Finally, a great primary market usually provides special financial aids in moving the crop. Particular banks specialize in transactions involving a single product, and by their experience, skill, and knowledge of risks are able to extend accommodations that a less specialized bank would be forced to refuse. Such banks are of course impossible except at a primary market where there is sufficient volume of the special business to warrant a bank in narrowing its business to one industry.

Sale.—The farm products in a primary market may be sold to manufacturers in that city and thus end their journey as raw materials. For example, much of the wheat shipped to the Minneapolis market is sold to the millers for manufacture into flour. In the case of livestock at Chicago, it might well be said that the manufacturers, the slaughterers and packers, are themselves the primary market. Yet much livestock passes through the market from rangers to feeders. In most primary markets only a small proportion of the agricultural material is sold to manufacturers in the same city; most of it eventually is shipped on to secondary or seaboard markets, or to wholesalers, jobbers, retailers, or manufacturers in scores of smaller cities.

Secondary Markets.—A secondary market does for consumers what a local market performs for producers. For the most part the secondary markets receive their products from the primary markets, but on the other hand they also act as terminal markets for the crops produced in their own neighborhood. The functions of a secondary market are generally

limited to storage and sale. It does no price-fixing because it has no exchange. The little grading, inspecting, mixing, and preparation of containers that is done here, is usually confined to the stuff that reaches the secondary market not from the primary markets, but from the farms or local markets nearby. Wholesalers, jobbers, and manufacturers flourish in a secondary market.

Seaboard Markets.—Seaboard markets are hybrids containing all the features of all the other markets. For the neighboring farms they act as local markets; for the great vegetable and fruit crops of the Atlantic Coastal Plain they take on the characteristics of primary markets. For grain, livestock, and cotton they more closely resemble secondary markets but with the principal function to advance export business. Yet for grain and cotton they support exchanges. Indeed, the only two speculative exchanges for cotton are located at New Orleans and New York. The wool market of Boston, the second largest in the world, is a secondary market for imported wool but a primary market for American wool.

Although these conditions make it difficult to generalize about seaboard markets, the confusion disappears when attention is limited to one group of commodities at a particular seaboard market. It is then easy to classify the city as to its market function for that commodity. Since the seaboard markets are in the midst of dense populations, they show the most minute subdivision of middlemen and the greatest multiplication of wholesalers, jobbers, brokers, commission men, and retailers.

Retailers.—The retailer is the last link in the marketing chain, closest to the consumer and usually furthest from the producer. The retailers of farm products are grocers, fruit and produce dealers, delicatessen shops, milk stations, butter and egg specialty stores, grain, hay, straw and feed dealers,

and sometimes department stores. The retailer buys from wholesalers or jobbers, and sometimes from auction houses and commission men. He sells to the ultimate consumer.

The retailer is the most costly unit in the marketing system, for his charges for handling products are generally greater than those of all other units put together. It costs more to sell a dozen eggs across the counter of a Cambridge grocery store than it did to collect them at a Michigan local market, handle them in the Chicago primary market, hold them for four months in a Boston cold storage plant, and sell them through a jobber to the Cambridge grocer.

But the grocer should not be abused. He has to carry a large variety of stock, much of it perishable; he is forced to install special fixtures and to pay rent, heat, light, and insurance charges; he has to employ a force of helpers within the store as salesmen, and hire others as delivery men, besides supporting horses and wagons or trucks; delivery of small items is demanded of him and at odd hours; he has to extend credit and employ a bookkeeper; the telephone adds one more complexity to his business; and finally, he deals with small quantities and not bulk.

Although his costs are high, his selling price is kept close to his costs because he has to meet excessive competition. The chain store is able to undersell the regular retailer because it buys in bulk, distributes overhead charges over many stores, and eliminates the expense of credit and deliveries. A chain system of self-service stores still further reduces costs by eliminating much clerk hire. The co-operative store is also lower priced than the ordinary retail establishment because the store deals with selected customers and operates without profit.

Retailers Without Stores.—In addition to the retailers who operate stores, there are two other types, one the push-cart man, the other the huckster. The two differ in that the push-cart man generally covers less territory than the huckster.

The latter may be well set up with a horse and wagon or truck; or he may be the lowly carrier of a basket calling from door to door. These two retailers buy from auction houses or commission men as a rule, and by escaping many of the costs incident to a store may undersell the store.

Co-operative Marketing.—A few groups of farmers growing localized specialties have attempted to bridge the gap between themselves and the consumers of their product and also to allocate to themselves a larger proportion of the final retail price of their goods, by forming co-operative selling organizations. The most conspicuous successes in this novel attempt have been among the California and Florida orange growers, the Maine and New Jersey potato producers, and the Long Island cabbage and cauliflower raisers. Similar practices prevail in all these associations.

The co-operative association itself, through local and district clearing houses and a central exchange, takes the place of the local and primary market in collecting the crop. The fruit or vegetables are most carefully graded, wrapped, boxed, and labeled. So carefully and honestly is the grading done that the stuff sells either by label or by mere description or naming of the grade.

At each of the big secondary markets the co-operative association has its own representative who keeps the association informed about market conditions. The products are then shipped to the most favorable markets. If conditions change while the crops are on the railway, the cars are diverted in accordance with the new situation. When they arrive at their destination the local representative or branch takes charge and markets the load by means of auctions.

The most powerful of these co-operative associations is the California Fruit Exchange. It markets only the best fruit; the poor grades are manufactured into orange juice and candied peel.

Foreign Trade Organization.—For handling foreign trade in American farm stuff, there are export houses, commission houses, and foreign agents. Some of these sell all sorts of agricultural products but most of them specialize in one trade such as cotton, leaf-tobacco, or grain. Many of these concerns confine all their activities to the export business but others also engage in domestic commerce. These various houses or agents may enter the marketing chain at any point, from purchases in the farmer's field to the local primary or seaboard markets. Most of them, however, are concentrated in the seaboard and primary markets. Special arrangements in regard to port, transfer, and ocean charges are made, corresponding to the domestic "f.o.b." or "c.i.f." practices.

The general relationship of the American to the consuming country's marketing system is that of primary to secondary markets, although, as is often the case with wool, the American chain may constitute a local market supplying a primary market—London, for instance—located in another country. As for cotton, the relationship is more nearly that of one primary market to another; for example, New Orleans and Liverpool stand to each other as do New Orleans and New York.

The import business is conducted by American import houses, American import commission houses, or direct importation by American consumers, especially manufacturers using large quantities of a given material. Such commodities as wool, coffee, sugar, bananas, and pineapples enter our market chain in these ways. What has been said about exports applies to imports, except of course that the flow of commodities and the relationships are reversed.

Wastes in Marketing.—Although the marketing system as a whole is far more efficient than is generally believed, and contains no more subdivision of middlemen than the wide gap between producers and consumers necessitates, nevertheless the system is subject to many wastes. The farmer himself lacks

knowledge of market demand and prices, and so either raises too much or too little of a given product, or sells his stuff to the wrong market at too low a price. The farmer and the local market men are too careless about sorting, grading, and packing. A carload of potatoes, some big and some little, sells at the price of the little potatoes, not of the big ones. The prevalence of dishonest packing, moreover, causes buyers to shade prices despite a favorable appearance of the package. Unless a farmer or a local market man has gained a reputation for honesty, this shading of prices penalizes honest packing. In many markets, besides, there is loss for growers because of too few buyers, or a loss to middlemen because of the overabundance of buyers. Poor roads and inadequate railway facilities are responsible for much loss. Poor management, especially in co-operative associations, also occasions much waste.

At the big markets loss arises from inadequate inspection, inaccessible or congested terminals and warehouses, and dishonest or anti-social practices. Individual retailers are prone to overstock their shelves and bins, and the whole group of retailers contains too many members for efficient distribution. One of the effects of overmanning the retail business is the predominance of poor management. Some retailers, too, are dishonest with weights and measures, a crime for which the innocent consumer pays the penalty. All of these wastes in the marketing add to the high cost of living.

Marketing Mineral Products: Contrasts with Agricultural Products.—The conditions within the mining industry differ in many ways from those in agriculture, and thus there is corresponding divergence in marketing methods.

In the first place, both the producers and consumers of mineral products are fewer in number than is the case as regards farm crops. This makes it easier to bring the two parties together without elaborate mechanisms.

Secondly, mineral products are not so perishable and hence speed in marketing is not so essential. On this account also the problem of storage is greatly simplified. For example, anthracite coal and iron ore are stored for months in great piles on the ground and completely open to the elements. Except for coal, minerals are not sold directly to consumers without radical change of form; in other words, the consumers of minerals are not the general public but a relatively few manufacturers.

This has led to the third great difference between minerals and agricultural products, namely, that the mineral industry is more thoroughly integrated. Manufacturers have acquired control over all the processes from mine to factory whereby the mineral raw materials are obtained. The United States Steel Corporation is a case in point. Sometimes the integration begins with the mine, as was recently illustrated when the Anaconda Copper Company absorbed the American Brass Manufacturing Company.

Again the mineral industry is distinctive by the absence of a series of interrelated markets, and for the most part by the lack of exchanges. Prices generally are determined by the quotations of big refiners and are adjusted by competition between these refiners.

Finally, the market for some minerals such as coal, petroleum, or cement is mostly regional rather than national or international.

The Marketing of Metals.—Since the largest factor in the iron manufacturing industry is the United States Steel Corporation, and inasmuch as the corporation owns or operates its own mines, fleets, and railroads, there is little separation of producer and consumer and hence no special market organization for iron ore. This is emphasized by the fact that the independent iron makers have followed the same practice of owning or controlling their own ore.

For metals other than iron the connection between ore producer and consumer is not so intimate, yet here also the intervening steps are few. Separate mines sell their product to a concentrator. This company functions somewhat as a local market, collecting the product from various producers and then sorting, grading, and concentrating the accumulation. But it often happens that the same men own the mines and the concentrating companies.

From the concentrator the ore is shipped to a refiner. The refineries are usually located so as to give easy access to the buyers of refined metals, or in other words, the manufacturers of the metal. Hence if there are several refiners at one place, we have an approach to a primary market. Concentrators and refiners, however, are sometimes the same set of individuals, and if the concentration in turn is tied in with mining operations, we really have an integrated industry rather than a marketing organization. Since integration is not universal, we do have the rudiments of a market organization in the metal industries.

The Marketing of Mineral Fuels.—The principal mineral fuel is soft coal. As we have seen in Chapter V, this mineral is produced in thirty of the forty-eight states. Since this brings most producers and consumers close together, there is no need for an elaborate national coal marketing organization.

Instead, the country is divided into competitive regions, each of which, despite some overlapping of sales, confines its mining and selling of coal to its own area. Within the district the mine may sell to a large wholesaler who in turn distributes to retail yards, or the mine may get rid of its output to a retailer directly, or may even go to the ultimate consumer.

Manufacturers who use large quantities of coal may buy the output of one or more mines, or may depend upon their local retailer. The most usual practice, however, is for a manufacturer to make all his purchases from the wholesaler.

The heads of families generally get their household supplies of coal from a retailer, although some are so fortunately situated as to buy it directly from a mine. A few households have their own mines.

Aside from a few general grades such as steam coal, coking coal, non-coking coal, or semi-bituminous, there is little attempt to market soft coal in grades according to quality. If coal were sold according to its heating value, a great national waste could be reduced. As for storage, the liability of spontaneous combustion has so far prevented it on any extensive scale. As already shown in Chapter V, the irregularity of coal production is a national calamity. In its irregularity, the soft coal industry is now what the butter and eggs business would be without cold storage facilities.

Anthracite Coal.—The anthracite coal industry, being more highly localized, has a more closely knit marketing organization. The mines are owned or operated by eight great producers. These in turn sell their product to large distributing corporations. The latter deal either directly with retail yards, or indirectly through a large wholesaler who dominates a district. Almost all anthracite coal is burned in the family cook stove or the household furnace. The coal is graded according to size, not quality, the price being less for the smaller sizes partly because the demand is lighter and partly because the small sizes have to meet the competition of soft coal.

Petroleum.—Petroleum is classified as a mineral fuel although it has many uses other than as a fuel. The hundreds of individual well owners sell their output to pipe line companies at prices set by the large refiners. The pipe lines, too, belong to the refiners and carry the oil to the nearest or neediest refinery. Until fifteen years ago the Standard Oil Company owned no wells, but since then it has bought a few for strategic purposes in various fields.

After petroleum passes through a refinery it is a manufactured product, but like lumber, it is so closely analogous to a raw material that the marketing organization may be treated in this chapter.

At the refinery the refined petroleum is pumped into tank steamers if it is to be shipped to a point on tidewater, or into tank cars if its destination is inland. At strategic points throughout the country great storage tanks receive the liquid cargo from the tank boats or cars. From these central reservoirs carload shipments are made to smaller stations scattered throughout a district. Tank wagons or trucks are filled at the small station and carry the oil to retailers or direct to the final consumer.

The oil does not change ownership from the time it enters the pipe line in the oil field until it reaches either the retailer or the final consumer, so there is no such thing as a local, primary, or secondary oil market.

Marketing of Lumber.—Sawmills function as local markets for the timber cutting and logging industry. From the mills manufactured lumber is sold either to the nearest wholesale lumber center in the district or to another center in another district. There is more general inter-regional competition in the lumber trade than in the soft coal trade.

Although there is no such thing as a primary market in the lumber industry analogous to the primary grain markets with all their complex attendant subdivisions of marketing, nevertheless it is within the truth to call Chicago the primary market for soft woods and Memphis for hardwoods.

From these primary markets, lumber is shipped to a district wholesale market and thence to the retail lumber yards. Part of the increased cost of lumber is due to the amplification of services demanded by the consumer of these retail yards. Large and varied stocks are required, and wood from different competing forest regions. Even delivery to the job is de-

manded. Lumber yards are also asked to handle planing mill products. The latter mills obtain their lumber from wholesalers as do other manufacturers who buy large quantities of lumber. Some of the greatest furniture companies buy their lumber directly from the sawmills or even in some cases carry on logging on their own account. Most of the wood pulp paper mills do their own logging, although some purchase logs from logging companies.

As we have shown, for edible food products the marketing system joins producers with ultimate consumers. But for many farm commodities, and nearly all mineral and forest products, the marketing scheme is designed to connect fields, mines, and forests with manufacturers, who must change the form of the raw materials before they are ready for ultimate consumption. The following chapter, therefore, will deal with manufacturing. After that discussion is completed we will point out how manufactured products reach their final users.

CHAPTER IX

DEVELOPMENT AND LOCATION OF MANUFACTURING INDUSTRIES

Manufacturing Confined to Small Area.—Our ideas are based so much upon the environment in which we dwell, that it is difficult for persons who have lived always in one portion of our country to judge correctly the relative importance of the industries with which their daily associations make them familiar. A young man whose life had been spent in Pennsylvania might be excused for believing that the world was engaged feverishly in the operation of blast furnaces or rolling mills. Similarly the Rhode Islander might boast with some reason that the world's chief concern was with cotton mills. On the other hand, a Wyoming youth may have seen factories only in pictures, and could be pardoned if he limited his interest in manufactured articles to mail-order catalogs or the shelves of department stores.

As a matter of fact, nearly all of our manufacturing is crowded into a few states in a small section of the country. About two-thirds of our manufacturing is east of Peoria and St. Louis, south of Chicago, Detroit, Buffalo, and Manchester (New Hampshire), and north of Cairo, Cincinnati, Lynchburg, and Richmond.

To draw even narrower limits one may say that more than one-third of the nation's manufacturing is found in southern New England, New York, New Jersey, and Pennsylvania. Yet even within this small domain, factories as we know them are comparatively recent sources of wealth because much of their prominence has been attained since 1870. These facts

raise the several questions as to why America was so slow in developing manufacturing, why our manufacturing is so localized, and what may be expected as to its expansion.

Hindrances to the Development of Manufacturing:

1. Free Land.—Until 1890 when we began to realize that our free land was reaching exhaustion, the United States could be called a frontier nation. A pioneer in a new land is usually forced to draw his food, clothing, and shelter directly from the soil; if farming is at all feasible, agriculture usually becomes the predominant industry.

Up to 1920 more than half the people of the United States lived in rural communities comprising less than 2,500 population. We have always been dominantly a nation of farmers. Our great interest in this one field of endeavor has checked our entrance into others. Manufacturing, always a secondary industry, has been held in abeyance because so much of our energy has been directed into the primary industry of cultivating the land. Farming creates new wealth, while manufacturing merely changes the form and adds to the value of wealth already existing. As long as it is possible to generate original capital, men hesitate to divert their attention to manipulation of capital previously produced by some one else.

2. Lack of Labor.—But the primacy of agriculture does not explain entirely the slowness with which we adopted manufacturing. Labor has always been scarce in relation to the demand for it in our continental nation. In the face of cheap land those industries dependent upon skilled male labor have always found it difficult to establish themselves or to expand rapidly. Labor reserves are necessary for a quick growth of manufacturing and our labor history has been until recently a story of deficit. Our relative scarcity of labor has militated against the establishment or retention of manufacturing enterprises.

3. Lack of Fluid Capital.—Likewise as a nation we have been without reserves of capital. A frontier is a sponge sucking capital into land mortgages, farm animals, and working equipment, all of which are forms of fixed capital. Manufacturing presupposes surplus funds free for investment. In the youth of manufacturing itself, capital rapidly assumes fixed forms in land, buildings, machines and tools, so that if capital is not abundant that which is necessary to establish the enterprise consumes much of what should be employed in the routine conduct of the business. Where both agriculture and manufacturing are freezing capital into fixed forms in a new land, capital becomes high priced, that is, interest rates are high. This adds to the cost of operating all industries, and manufacturing, being largely under the influence of foreign competition, suffers a great retardation.

4. Transportation and Markets.—A new country, furthermore, must devote much of its energy to constructing transportation facilities. This again calls for capital and in addition takes time. Our country grew so rapidly that it was difficult to keep pace with the needs in building roads, canals, or railroads. Until transportation was made adequate, manufacturing projects were limited in their ability to reach a market. Since production without sale is useless, our manufacturing industries were confined to the markets made available by existing transportation agencies. The paucity of transportation also hampered enterprises in securing raw materials. Dependent upon local materials and a local market, operators were forced to restrict their business to a small scale; in doing so they had to meet the competition of household production.

5. British Colonial Policy.—Before the Revolution the Americans had another obstacle to surmount if they were to indulge in manufacturing; that was the British colonial policy

of conducting dependencies as if they were plantations. The colony was to supply the home country with raw materials but was to be dependent upon the mother country for all manufactured articles.

About 1740 a great era of invention began in Great Britain, with the result that by 1830 the United Kingdom was the world's leader in manufacturing. This advantage she proposed to maintain; she jealously guarded her inventions and prohibited the exportation of machines, parts of machines, or even skilled artisans. She was particularly anxious that her own colonies should not compete with her, and rigorously excluded them from any undertakings that might lead to economic independence. In this policy the British conformed to the general one, common to all nations at that time, of strictly conserving every national advantage.

When the Revolution severed the political bonds between America and Britain, and Americans attempted to set up their own manufacturing plants, it is said that British agents quietly bought the most promising factories, dismantled them and shipped the best machinery to London. With the national ethics and economics then prevailing this was not only justifiable but praiseworthy; but this action, with the whole previous policy of pinching out colonial manufacturing, effectually curtailed American experiments in that mode of livelihood.

Slow Growth of the Factory System in America.—With so many discouraging factors to contend against, it is not surprising that American manufacturing before the Revolution was almost entirely of the household variety, and that as late as 1830 the only industries that had fully emerged into the factory régime were cotton and iron manufacture. It also accounts for the fact that even at the time of the Civil War our factory industry in general was twenty-five years behind the British, and that we did not really begin to realize our remarkable advantages for manufacturing until after 1870.

Present Eminence Obscured.—Between that date and 1920, the United States became the foremost manufacturing nation in the world. Our pre-eminence in this field is obscured because many observers base their conclusions upon the manufactured articles which nations send into foreign trade.

If foreign trade in manufactured commodities is made the measure, of course we do not stand nearly so high as Great Britain, pre-war Germany, or France; but if domestic commerce is added to foreign trade, then our manufacturing productivity stands forth. Our domestic trade is continental in scope, whereas with our rivals, because of the constriction of their political boundaries, this is not the case. Whatever continental trade each of them possesses must be classified as foreign commerce. It is unfair to us to judge our manufacturing importance by the articles we turn into foreign trade, just as it would be untrue to gauge our rival's manufacturing importance by the commodities they make to sell at home.

When total value of output, value added by manufacture, total capital invested, or volume of output are made the measures, then our manufacturing stands among the leaders. How is it that a nation weak in manufacturing as late as 1870, can claim so distinguished a place fifty years later?

Reasons for Pre-eminence: 1. Size of Country.—The primary explanation of this phenomenon is our continental size. Of all the manufacturing nations, we alone have had more than enough room to give homes to all the people born to us, as well as to all the millions who have come to us from crowded foreign lands. In 1920 our population was 105 million, while that of Germany was 60 million, the United Kingdom 46 million, France 42 million, Italy 38 million, and Belgium $7\frac{1}{2}$ million. The principal virtue in these figures for our purposes is that they indicate the immensity of our domestic market. Very little of this market was pocketed out of reach of our transportation services. Only a few places in the Appa-

lachians, the Ozarks, and the Rockies can be said to be isolated. In comparison with our total population the people living under such remote conditions are few in number, so that our population statistics really reflect the size of our consuming market.

2. Common Language, Customs, etc.—Furthermore, this great market has a common language, common customs, nearly uniform standards of living, and no artificial trade barriers. Since English is our mother tongue, national advertising may be employed to push our American goods in America. No other nation can or does approach our intensity or immensity of national advertising. All the buying power from Portland, Maine, to Portland, Oregon, and from Detroit to New Orleans may be focused upon one company by means of national advertising. A manufacturer's message may be carried weekly by one periodical alone to 10 million persons.

Under the stimulus of continental purchases our manufacturing could hardly avoid growth. Then, too, our customs and standards are everywhere similar. Foreign visitors complain that our towns have no individuality but from coast to coast are as much alike as copper pennies, the only difference being that some show more wear than others. They say, too, that they cannot distinguish classes, that not only are "the colonel's lady and Judy O'Grady sisters under their skins," but they are sisters also in appearance. Fifth Avenue,⁶ Michigan Avenue, and "Main Street," all show the same kind of folks, dressed in the same fashion. Whatever we lose in the picturesque we gain in standardization of market from the manufacturer's point of view. An article made perhaps in Peoria may be as readily sold in San Diego as in Baltimore.

Finally, interstate commerce has no state tariff barriers, nor any boundary customs officials. Goods made in Manchester, England, and sold in Monte Carlo may have from one to four tariff or customs walls to climb, whereas similar goods made in Manchester, New Hampshire, may be delivered at Palm Beach

with no barriers at all. Likewise the English product may have to be loaded and unloaded into boats and transferred from a railroad car of one gauge to another of a different gauge, while the American shipment goes in one car with no change from the factory itself to the Palm Beach retailer. Our national continental market therefore is at the disposal of every manufacturer. Before 1870 this was not true, for our railways had not fully developed, and isolation bred individuality, even peculiarity, instead of uniformity. With interrupted communication, too, we could not have really national periodicals nor national advertising.

3. Abundance of Resources—Farm Products.—Our continental size, however, does not completely explain the phenomenal growth of our manufacturing. The abundance and variety of our resources for manufacturing must also be taken into account. Farms furnish 79% of all the materials upon which factories work. No other great nation is so abundantly endowed with farm land per capita as the United States, for our farm land per capita is six times that of European Russia or France and nine times that of Germany or the United Kingdom.

The manufactures most benefited by our extensive farm lands are the textile industries. The three principal textile raw materials are cotton, wool, and flax. In cotton production the United States leads the world, for more than half the world's output comes from our southern states. For wool, although we are not so favorably situated as for cotton, nevertheless we have more sheep per capita than any other nation except the United Kingdom, Argentina, and Australia. Flax requires cheap labor and consequently we cannot grow it, but there is always the possibility that flax culture will be put upon a machine basis, and if so we could rival the world as we do for wheat and as we do already for flaxseed, that is, linseed.

Our farms not only give our textile factories large amounts

of raw materials, but also supply all those industries dealing with food stuffs. These range all the way from tiny tomato canneries of local importance only, to great plants like those of the Heinz Company, known all over the nation. The food industries group also includes small or great flour mills, tiny or enormous meat-packing plants, and little or big sugar refineries. Farm products, furthermore, are the basis for our tobacco industries, giving business to factories making plug chewing tobacco, smoking tobacco, cigars, and cigarettes.

4. Abundance of Resources—Minerals.—Next to our farms as resources for manufacturing, come our extensive mineral deposits. American mines furnish 15% of the raw materials used by American manufacturers. One-third of the coal, one-fourth of the iron, one-half of the copper, and three-fifths of the petroleum of the world are found in the United States. No nation has become great for manufactures without cheap power, and the usual source of cheap power is abundance of coal. In gross amounts, no other nation is so bountifully supplied with coal as the United States, and in coal per capita (5.4) we have but one superior, namely, the United Kingdom (6.5 tons per capita). We mine over 500 million tons per year, while the United Kingdom mines but half that amount. Largely because our iron ore mines are greatest in extent, highest in grade of ore, and easiest mined, our iron and steel industry outranks that of any other nation. Our copper mines support the brass industry and the electric machinery manufacture. Our unrivaled petroleum deposits make us the leader in the products refined from crude oil. Our raw materials for cement manufacture, everywhere abundant, help explain in part the sudden amazing growth in the utilization of concrete.

5. Abundance of Resources—Forest Products.—The remaining 5% of our factory raw materials are supplied by our forests. In this resource no other great manufacturing

nation is so well furnished as we are. Wood is the raw material used for a wide range of factories from those that make wooden dolls or toys to those that produce victrolas, from those that make baby carriages to those that build ships. Wood is also the material from which all newspaper and most magazine paper is manufactured. Tanneries depend in part on the bark of trees for their tannic acid.

Farms, mines, and forests, all natural resources, have poured out a stream of wealth that flowed into our factories and floated them high upon the tide of success. The rapid development of American manufacturing is due then, in part, to the variety, character, and amount of resources placed at the disposal of our business men.

6. Adequate Transportation.—These resources, like our continental market, have been made available by the penetration of our systems of communication and transportation. Since 1870 we have not only extended our transportation so as to tie the whole continent together, but we have improved it greatly so that bulky, heavy raw materials may be carried thousands of miles at the former cost of scores of miles. It costs only a fraction as much now to send a ton of iron ore from Duluth to Pittsburgh as it once did to carry Juniata iron, mined in Pennsylvania, to Pittsburgh.

Any manufacturer may draw on the resources of the continent instead of limiting himself to the raw materials of his own locality. For example, the sulphite paper mills of Massachusetts have bought their sulphur supplies in Louisiana, the brass makers of Connecticut obtain copper from Montana and zinc from Missouri, the cotton mills of Saco, Maine, may get their cotton in Texas, while a Duluth wool mill operates with Pennsylvania coal.

7. Influence of Wars.—War has been a stimulus to our factory enterprises because it has taught the desirability of

economic independence. Moreover, by shutting out foreign competition, it has pushed forward domestic manufacture to supply domestic demand. The Revolution and the War of 1812 aided materially in getting us started as a manufacturing nation, while the Civil War supplied the first great impulse toward manufacturing expansion.

The World War of 1914 put a heavy pressure upon our factories even before we entered the conflict. It enabled us to scrap old inefficient work places and to build adequate new ones, and then led to the expansion of manufacturing facilities to meet war needs. The close of the war found us for the first time in possession of more productive capacity than our domestic consumption calls for, and therefore opens for us an era in which our producers will be attracted to foreign trade instead of being confined to the demands of domestic commerce.

8. Capital Now Abundant.—Our previous restrictions in capital and labor have been alleviated since 1870. The exploitation of our stores of precious metals has done much to relieve the pressure for fluid capital, but our passage from a frontier condition, with its insistent demand for capital, to a condition of maturity with much of our need for fixed capital satisfied, has been more influential in releasing capital for investment purposes.

The development of large-scale industry to satisfy our continental size has been highly important in relation to capital, for today our greatest fund of capital comes from corporate savings and not from adding together the mites saved by individuals. As regards capital we have passed from an age of deficit to an age of surplus. We had reached this stage before the World War but that conflict solidified our position and concentrated the growth of a decade into four years. Hence we are now creditors and not debtors as a nation and have plenty of capital to support our own industrial enterprises.

9. Labor No Longer Scarce.—The passing of free land since 1870 has relieved us of labor shortage. From labor's own immediate viewpoint this is unfortunate, for opportunity is curtailed, but from the point of view of an employer the constant strain to offset the seepage of labor to the land has been reduced. Labor-saving devices on farms and in mines have also done much to grant an increased product from extractive industries with less actual human labor.

Inventive ability turned to the use of factory owners has resulted in perfecting machinery so that dependence upon labor alone is not so prevalent as it once was. The machinery enables a larger production at less unit cost for labor.

Furthermore, recent immigration has not flowed directly to the land but has been turned more and more into our workshops. With the detrimental social effects of this change we are not here concerned; we only emphasize the fact of the change as relieving the labor shortage that once faced nearly all our factory enterprisers.

10. First Generation Enterprisers.—Almost as important as any factor in accounting for the success of American manufacturers, is the fact that the directing officers are still, in most cases, the men who established the business. A concern in the first generation has a greater chance to succeed than one that has been held in a family for some time. There is a trite saying that a man gets out of any association what he puts into it. Since the founder of a business gives it a full share of his energy, his time, and his brain, the chance of success is increased, but inasmuch as the man who inherits a going concern usually has acquired interests outside of it, or in any case cannot share in the joy or pride of its creation, the business suffers. To such a man the business is not his own child but only one he has adopted.

Heredity also plays strange pranks. There is no guarantee that a successful father will have a successful son, because the

boy may inherit, say, his mother's artistic instincts rather than his father's business acumen, or if both father and mother are the business type, the son may revert to a previous ancestor whose abilities turned entirely in another direction. So there is always a great risk when a concern passes from the control of the man or men who made it.

The fact, then, that our American enterprises have been in the hands of the men who brought them into existence has been a decidedly strong influence in their favor. One of the principal advantages derived from this first-generation aspect of our business is the freedom with which experimentation has been conducted. Our business men have not been shackled by tradition; they themselves have been pioneers and hence have not been afraid to try new things. This willingness to learn and to change has kept business plastic and hence permitted its growth. In other words, our industry has not hardened or crystallized, but has kept itself free to find new profit in novel ventures. New methods, machines, or products have a strong appeal to Americans because they are themselves a new people in a new country.

Localization of Industry.—Although our one-time paucity of manufacturing has been changed to prodigality by all the factors just mentioned, our manufacturing has still been closely confined to the northeastern section of the United States. A study of this small area reveals that not all types of products are produced everywhere within it but that particular localities have well-nigh monopolized certain industries, so that the nation's product for those industries comes almost entirely from one town or one narrow locality. This is called the localization of industry. How it started and grew and why it endures should be explained.

Origin of Localization.—Industries have started in particular places because of special advantages in respect to raw

materials, power, market, or labor, and on account of topography, monopoly, or mere accident. *Advantageous raw materials* explain the origin of the cement industry in the Lehigh Valley, or the paper industry of New York and New England.

The presence of *power* decided the career of Minneapolis as a flour maker, of Niagara Falls in such electricity-using industries as the manufacture of calcium carbide, corborundum, and aluminum.

A potent factor in determining the localization of iron and steel manufacture or the production of agricultural tools and machinery has been *nearness to market*.

The presence of unused *female labor* in the anthracite coal mining area has made that region the second center of silk manufacturing in the United States.

Peculiar advantages have been offered by *valleys* to the expansion of particular industries throughout a valley's length, whereas the encompassing hills have been obstacles to the passage of the industry across them. Thus the Connecticut Valley has been a center for the manufacture of paper in its upper reaches, and edge tools or firearms in its lower, while the nearby Naugatuck Valley has always been the principal source of American brass making.

Sugar and oil refining are localized at strategic points in reference to markets because these industries have been so nearly *monopolized* by great single companies. This kind of localization, however, may be instantly destroyed by the expiration of patents or adverse court decisions and legislation.

By far the most numerous instances of localization are due, however, to an *accidental early start*. Among the many instances one might mention the whip industry of Westfield, Massachusetts, the collar industry of Troy, the glove industry of Gloversville, and the automobile industry of Detroit.

Growth of Localized Industries.—Having started, industries now localized have grown where they originated because

fellow townsmen have *imitated* the success of one of their number. The influence of *families* has often counted in promoting the growth of the industry in which the family was interested—for example the work of the Slaters, Knights, and Bordens in textile manufacture in Rhode Island and adjacent parts of Massachusetts. Or *minor managers*, such as superintendents, have been most easily able to step into an owner's position in a community where the industry they proposed to enter was a tested and proven enterprise.

The later growth of a localized industry is often due to the addition of plants that specialize in the *manufacture of parts* of the whole article, such as the aggregation of automobile accessory plants in Detroit. Often other mills base their prosperity on the *manufacture of waste products* thrown out of the factories localized. Such mills must locate where there is a large amount of the waste available. The leatherboard mills of Lynn live on the scrap discarded by Lynn's shoe factories. Some factories, too, go to towns where others of their kind have long been known in order to take advantage of the *prestige* established for the town's product.

Why Localization Has Endured.—Localization has endured principally because of *skilled labor* or because *special marketing facilities* have been secured by the town's long-continued adherence to one product. Nearly all of our localized industries use skilled labor. As this kind of labor is more immobile than unskilled, new enterprises must seek the places where the requisite skilled labor has long been rooted. An industry that is localized is in the best situation to demand *favorable freight rates* on its raw materials or its finished articles. The congregation of like plants also *attracts buyers*, and *specialists* appear who take over the function of storing and selling both raw materials and the commodity itself. To labor there is an advantage in localization in that it *guarantees jobs* and permits easy labor organization into *unions*.

Disadvantages of Localization.—Localization has its disadvantages. One of these is the *distance from raw materials or markets* necessarily occasioned by adherence to one small locality. A community that has specialized as well as localized its industry is likely to be badly hit by *hard times*. To employers the prevalence and *strength of labor unions* in localized industries may appear as a disadvantage. To workers the *limitation of choice of occupation* may be a hardship if natural aptitude does not fall along the lines required by the localized industry. As these disadvantages, however, did not, in former days, ordinarily offset entirely the advantages just mentioned, localization has been one of the most outstanding features of our American manufacturing.

Decentralization of Industry: 1. Raw Materials.—The tide against localization and toward decentralization, however, set in long ago and is rising toward the flood. One by one the factors that have limited mills to specific localities have been attacked until they all have snapped or loosened save a single exception.

We have learned that raw materials need not hold a factory to a certain place, for the device of *concentration of materials* removes this necessity. For example, tanning was long restricted to forest regions because tan bark is too fragile and too bulky and low in value to warrant shipment to a distance. But we now leach the tannic acid from the bark, concentrate it, and ship it anywhere.

Where raw materials do not lend themselves to concentration we have discovered that *substitution* is practicable. The steel industry was long fastened to Pittsburgh, partly because that city had a special advantage in securing the highest grade beehive oven coke, but now good coke may be made from mediocre coal with a by-product oven, with the result that steel makers no longer need consider coke as a limiting factor when deciding upon a location for a mill.

2. Labor.—As for labor, all industrial progress has been founded upon escape from labor's dominance. Consciously or unconsciously the perfection of machinery has transferred manual skill to inanimate cogs, gears, and cams. The whole trend of industry is away from skilled labor toward unskilled labor, a trend made possible by improved machinery. Much of labor's skill has been snatched away and what remains is in constant danger of loss.

Unskilled labor can exert no leverage in locating a plant; the enterprise may be started anywhere and mobile unskilled labor brought to it. The borax mills of our western desert, the paper mills in Maine forests, or an electrical porcelain factory at Macomb, Illinois, all illustrate this truth.

3. Power.—When water was the chief source of power, a factory was hung necessarily upon the edge of the falls. Coal and steam gave a wider choice of location; electricity extended the range. It has been demonstrated that electricity can be carried over wires for 500 miles from its source. Since no place in the United States is more than 200 miles from a coal mine or a practicable water-power site, there is no spot so remote that it need fear for lack of power. What the wireless transmission of power may have in store for us no one dares predict, but we need not wait for it, to have the possibility of escape from the restrictions imposed by power needs.

If future manufacturing depends upon hydro-electric power, then certainly the industries in which power is a large element of cost will be forced to move westward, because 70% of our available water-power resource lies west of the Mississippi River.

4. Capital.—Capital never has played much part in determining the localization of industry. Capital is not provincial, neither is it national. It will go wherever there is a reasonable promise of profit with a reasonable risk. If other

factors favor decentralization of industry, capital will prove no bar to that movement.

5. Nearness to Market.—Only one factor remains of the many that once originated and maintained localization of industry. That one is nearness to market. There has been and always will be an advantage in locating a factory near its market.

But in the United States the location of the market has changed. At first the center of population and therefore the center of the market was near Washington, D. C. Each census has witnessed the center of population creeping westward, first to the Ohio River at Parkersburg, then across the state of Ohio to Indiana. The 1920 census left it west of Bloomington, Indiana.

Our industrial centers were established when the population was more generally massed in the east. As the center of population moved westward the center of manufacturing remained fixed because of the advantages inherent in localization. Now that those advantages have been weakened, the remaining factor of nearness to market will tend to pull manufacturing westward, especially since the Pacific Coast and the middle west are growing much more rapidly than the east. The migration of industry in response to shifting of the market westward will tend to decentralize manufacturing rather than localize it.

It is foreshadowed that future railroad rates will not favor the long haul over the short, and that rates will be based upon mileage and service. If this occurs the advantage of a location near a market will be heightened, and what is said above may be intensified.

CHAPTER X

THE MAJOR MANUFACTURING INDUSTRIES

Cotton Manufacture.—The modern factory régime may be said to have been born in the English cotton manufacturing industry. Beginning in 1733 when John Kay invented an improved shuttle for weaving, invention followed invention in cotton spinning and weaving. The application of power to these devices followed, first man-power, then horse-power, then water and finally steam. These—together with Eli Whitney's cotton-gin for economically cleaning seeds from cotton lint—by 1830 had transformed cotton manufacture from a hand enterprise in the household to a machine-using factory industry. Since the example set in cotton manufacture has been followed in whole or in part by nearly every former household industry, and has been adopted by every new industry since 1800, we may justly attribute the parenthood of our factory era to cotton manufacture.

Beginning of Cotton Manufacture in America.—Our national independence was won while this industrial revolution was going on, and we strove eagerly to establish a similar economic change in our own cotton manufacture. An English immigrant, Samuel Slater, brought to us the mechanical contrivances necessary for the initiation of the business, and one of our own citizens, Francis Cabot Lowell, at length invented the devices whereby water-power was applied in the manufacture.

Capital.—After its inception the determinants in the cotton industry were capital, water-power, and female labor.

Slater started his first machines in 1790, and Lowell made his contribution of the power loom in 1814.

At that time there was only one place in America possessing the three requisites of capital, power, and labor, and that was New England. The rest of the country then settled was engaged in profitable agriculture, and so was little interested in new modes of livelihood. New England had long suffered from her inaptitude for agriculture and had early turned to the sea where fishing and commerce yielded sustenance and profit. From her commerce she had capital available for new enterprises. At just the time cotton manufacture started the commerce was rendered unprofitable by embargo and war, and hence New England was ready to embark upon the new business.

A venture in cotton making did not consist simply of buying machinery but involved the construction of whole towns, including houses, stores, and churches, in addition to mills, dams, canals, and raceways. From half a million to a million and a half dollars were required to engage in the business. New England alone had such sums free for investment.

In addition to the original capital, a cotton manufacturer had to keep supplementing it with capital invested in machines. Success was won only by the man who raced to install new devices, and these became obsolete in five years. The manufacturer who lacked capital to be the first to adopt the latest inventions lost his trade and then his mills. The source of this capital is indicated by the fact that in 1834 seven-eighths of the merchants of Boston were identified with New England manufactures as stockholders, directors, or agents.

Water-Power.—Water-power, the second essential for cotton manufacture, New England possessed in abundance, the heritage of the ancient glacier that twisted streams into new courses and created lakes as storage reservoirs. Lowell, Lawrence, Holyoke, Woonsocket, Saco, and Pawtucket are exam-

ples of the utilization of water-power for cotton manufacture. By 1850 there were thirty-three mills in Lowell alone and this city was the principal cotton manufacturing center of the United States.

Labor.—For labor the mills levied upon the homes of absentee sailors, or sought the dependent spinsters abandoned to the cheerless life of rocky hilltop farms. Both types of labor hailed the new factories and gladly took jobs in them. Nowhere else in the world did cotton manufacture start under such auspicious circumstances; and nowhere else in America were there so many surplus women eager for economic independence. As no other section of the United States combined the assets of capital, power, and labor to the degree of New England, that small area became the seat of cotton manufacture.

Coal Fuel.—After 1850 a new economic factor appeared in the industry. The limit of expansion for mills located on water-power was the maximum power available at that point. The domestic demand had pushed our cotton mills to this maximum by 1850. Further expansion was denied until manufacturers turned to steam-power. Its adoption brought a change to the industry.

Since industrial coal entered New England by water, it was advantageous to save a haul inland by erecting factories upon the seaboard itself. The maritime climate because of its natural humidity proved valuable in the manufacturing operations. So the mills alongside salt water grew faster than the older ones inland. Fall River and later New Bedford wrested the crown of supremacy from Lowell.

New Sources of Labor.—Meanwhile American women had passed out of the mills into other new occupations. Their places were filled with immigrants, first Irish, then French-

Canadians, and eventually Slavs, Italians, or Portuguese. As each group's standard of living advanced, it left the mills to the next incoming group. This movement was furthered by perfecting machinery so it could be easily operated by untrained labor. But it has resulted in keeping cotton mill wages depressed; from which fact many social evils have arisen and social problems been created.

Southern Competition.—In 1870 the South challenged New England's previously uncontested supremacy in cotton manufacture. The South offered nearness to raw materials, abundant low-priced labor, freedom from onerous laws, cheap hydro-electric power, the newest best equipment, low taxes, and a large home market. Since New England had nothing to offset these advantages except experience, more abundant capital, a favorable climate, and more conveniently located dye houses or bleacheries, it is no wonder that an apprehensive chill ran through the older mill centers.

But experience has proved that these northern advantages are real, while many of the south's supposed advantages have drawbacks. For example, cheap labor is often inefficient, and low taxes are offset by heavy investments in factory towns, a requirement no longer important in the north.

Competition between the two regions has divided cotton manufacture into two parts, each carried on in the region best adapted to it. Cloth whose chief value is in the weight of the raw material it contains, is manufactured in the Carolinas and Georgia near the raw material, while cloth whose value lies in skilled workmanship is made in New England. Thus cotton duck is made in Georgia but madras in Massachusetts. Nevertheless, the south is constantly improving the grade of her output; and unless New England continually strains for higher perfection, her days as a cotton manufacturer are numbered. The south is already victorious in quantity, and may become the winner in quality of output.

Pacific Coast Mills.—The latest economic change in the cotton industry is its appearance upon the Pacific Coast. As yet the Pacific factories specialize upon automobile tire fabrics because the requisite long staple cotton is grown in the nearby Imperial Valley or Salt River Valley, but the industry once started there may expand in order to supply the coast with its cotton cloth needs. The chief detriment is lack of labor but since the coast is growing four times as fast as any other part of the United States, that handicap may soon be overcome.

Iron and Steel Manufacturing.—One central theme runs through the iron and steel industry of the United States; the market has been the operating cause for change of location, advance in technique, and the creation of new varieties of products. Maritime needs, frontier necessities, factory and farm equipment, railway construction and outfitting, shipbuilding, and foreign trade have been the markets that have determined the economic history of American iron and steel manufacture.

Colonial Market.—Aside from purely local needs supplied by local furnaces, the first great market for iron was in the commerce and shipbuilding of New England. Anchors, nails, cannon, shot, kettles, pipes, stills, and drying pans, were all required directly in New England's commerce or the distilling and refining businesses that grew out of the commerce. From 1650 to 1750, Massachusetts led the colonies in iron manufacture.

Frontier Market.—Western migration, first in the series of valleys that from Canada to Alabama cut through the foothills of the Alleghenies, and later along the great Ohio River Valley, established the second American iron industry in response to the new frontier market. Guns, axes, stoves, barrel hoops, and agricultural tools were the articles supplied

to this market by iron makers. The industry was centered in the Berkshires or Hudson-Champlain Valley in the north, and in the Great Valley of the south. Salisbury, Connecticut, and Lancaster, Pennsylvania, stood out among their contemporary iron-making competitors. When the migration poured down the Ohio River, first Cincinnati and then Pittsburgh became the center of iron making for the new pioneers.

Eastern Industrial Market.—Meanwhile in the east factories had appeared and expanded; turnpikes, canals, and railroads were built; and cities or towns were growing rapidly. These together provided a new great domestic eastern market for iron. Newer, bigger furnaces were needed to satisfy the demand, and these in turn demanded a new fuel. Anthracite coal was found to be satisfactory as a fuel, and eastern iron manufacture localized in eastern Pennsylvania in the center of the eastern market and alongside the anthracite coal fields.

Railways as Markets.—The Civil War marks a new period in iron manufacture. The real development of American railways came after this conflict. In 1860 we had but 52,000 miles of track, but in 1914 we had 240,000 miles—one-third of the entire railroad mileage of the world. To supply the materials for the construction and equipment of the railways expanding with such amazing rapidity staggered the already burdened iron industry.

Greater output was the immediate prime necessity, and in response to the need startling advances in mechanism were made. Forty-five foot furnaces gave way to those of 75 feet, and those in turn to others of 110 feet. Daily output beginning at 35 tons was pushed to 50 tons, a figure that was doubled in five years, and then doubled again. By 1890 the daily output was 300 tons, but in 1917 a 1,500 ton day was reached.

But such strides in production were based on technical changes as well as furnace size. Anthracite crushed under the

loads of the larger furnaces and was replaced with coke. Local ores in eastern Pennsylvania were too hard to mine and too limited in quantity to support the thriving iron industry. When the Sault Ste. Marie Canal was opened in 1855, the vast stores of high grade, easily mined ore of Minnesota became available.

A new market, the western railways and farms; a new fuel, coke; and a new source of ore, called for a new location for iron manufacture. Pittsburgh, near the best coke in the world, in touch with the new market and easily accessible to lake ores, became the hearth of the nation.

With the advent of Pittsburgh, the market cry was for better iron as well as more of it. To satisfy the demand for quality, steel replaced iron, and the steel in turn has been made by successive new processes in order to meet the insistent continuous demand for higher qualities.

Present Conditions.—Today Pittsburgh is no longer the focal point for westward travel; the iron industry, too, is no longer shackled to one kind of coke; and the market is no longer most easily reached from Pittsburgh. Although the city is still first in the industry, many new rivals are springing up to test its supremacy.

These new places are clustered about the Great Lakes, with Chicago and its environs taking the lead. For the market of the south, Birmingham, Alabama, occupies a position similar to Chicago with the unparalleled advantage of ore, coal, and limestone lying beside each other.

The development of eastern steel shipbuilding, together with the growing export business in iron and steel, is stimulating manufacture in the neighborhood of New York, Philadelphia, and Baltimore.

National Market and Large-Scale Enterprise.—The national market for steel has induced large-scale production, and this in turn has paved the way for integration. The vari-

ous parts of the iron industry coalesced; rolling mills absorbed furnace companies, amalgamated with fuel producers, consolidated ore field ownership, and finally controlled transportation by boat or railway.

When all the various stages of production from mining the ore to finishing rails, beams, or plates were unified under one authority, then followed an attempt to bring into the combine the most important secondary producers such as wire mills, tube factories, and the like.

In brief, this has been the history of the Carnegie companies, the United States Steel Corporation, and to a less degree that of smaller aggregations. Big integrated corporations were a response to national and international markets.

Wool Manufacture.—Unlike cotton manufacture which as we have shown was the parent of the factory system, wool manufacture has had an exceedingly ancient history as a hand and home work industry. Consequently it gave ground but slowly to the mechanical, large-scale, capitalistic production of modern times. There were many features of the wool industry that made it difficult to bring it under the factory régime.

There was *never enough raw material* collected in one place to provide an adequate market although nearly every farmer kept a few sheep. The fact of the small size of flocks compelled wool manufacture to be of small scale and local. Since the farmers kept the sheep primarily as ground cleaners or enrichers, and had only an incidental interest in the wool, the fleece came to the manufacturer in the greatest variety, and no way was provided to sort it into grades for market. *Standard raw material* therefore was *non-existent*.

Since wool has always been used principally for outer garments of personal wear, it has been subjected to the widest *vagaries of fashion*. Before the Civil War, there was *no standard all-wool product* that would carry a mill along despite loss or profit in "fliers" in fashionable cloth.

Dealing with non-standard raw materials, and non-standard products, the greatest reliance had to be upon *skilled labor*, for machinery is a product of standardization. Since the work was heavy it had to be done by men. Skilled male labor was the scarcest and the highest priced commodity in America until after the Civil War. When machines did appear they were designed for household rather than factory use.

Because of these matters, it was difficult to establish or maintain wool manufacture upon a factory basis. The industry, too, has been a pet of *tariff* makers whose tinkering has added one more uncertainty to its already overabundant capriciousness.

The only parts of the wool industry that weathered enough of the above disadvantages to establish themselves were those engaged in making satinets, flannels, shawls, and stockings. These types of manufacture could utilize the wool available and their product was fairly standard and comparatively simple in manipulation. But none of the mills engaged in any of these branches of the industry attained great size, and they constantly changed hands as periods of prosperity were followed by sterile stretches of depression.

Worsted Cloth.—Just before the Civil War a machine was invented whereby short-fibered, coarse wool could be combed. This invention enabled us to enter upon the manufacture of worsted cloth. The need for uniforms during the Civil War greatly stimulated the manufacture of worsted, and enabled the business to come through the always precarious stage of infancy.

Worsted manufacture involves simpler, more mechanical, more easily learned processes than the older branches of the industry. These facts led to the introduction of machinery and its operation by means of female labor. Furthermore, such products as blue serge or black clay, blue or black unfinished worsted, and certain plaid goods, can be classified as

staples. Since worsted resembles cotton, it can be mixed with cotton, a fact of great importance as the world's supplies of wool are lessening in proportion to increased demands.

As a consequence of these facts, the modern worsted industry closely resembles cotton manufacture and has developed dependence upon machinery, upon female labor, and upon large-scale operation.

The Leather Industry.—From reptiles to man, from roots to fruits, well-nigh every living thing has at some time in some places been made to fill man's essential need for leather. The most common practice has been the manufacture of leather from cow or horse hides and goat or sheep skins tanned by means of the bark of oak, chestnut, or hemlock trees.

The process of manufacture is simple; it consists of removing from the hide the hair or flesh, and then soaking the hide in a pit with tan bark and water until the tannic acid has hardened and swelled its fibers into leather.

Although the process is simple, it calls for great skill in its manipulation, and it is only recently that the science of chemistry has replaced rule-of-thumb practical experience. Chemistry is here working an industrial revolution in leather manufacture as truly as inventions did in the cotton industry.

Former Practices in Respect to Raw Materials.—For ages hides were carried to the source of bark. Hides are valuable in proportion to their weight or bulk, and do not deteriorate rapidly, hence may be carried around the world. On the other hand, bark is fragile, easily broken in travel, subject to the leaching of rain, is bulky and cheap. Hence bark must be used near the tree on which it grew.

Men searched the world for hides and brought them from the most remote isolated places into the routes of commerce. The selling of hides has often been the only outside business conducted by inaccessible communities. Over the paths of

trade, hides were brought into the forests where they were changed into leather.

Under these conditions tanneries were usually small and temporary; when the bark supply was exhausted the business moved on to new unstripped forests. In the United States it migrated from New England to Pennsylvania, and then into the southern Appalachians.

Present Practices in Respect to Raw Materials.—But modern enterprise has completely overturned these practices. Improved transportation has made the meat of the animal more important than its hide. The price of hides no longer varies with the demand for hides alone, but is primarily fixed by the demand for meat. Inasmuch as tanning takes from three to twelve months, the fluctuation in hide price introduces a speculative element into the business. In addition, refrigerator cars have made possible the building of great slaughter-houses near the source of animals. Hides now are collected by the thousands in one place instead of singly from remote districts.

A method of bringing tannic acid to the hides, therefore, became imperative. This was found by leaching the acid from the bark, concentrating the liquid, and shipping it to slaughter-house districts in bottles, kegs, or tank cars. Tannic acid derived from quebracho trees in Argentina now may be carried to Chicago to tan the hides of cattle butchered in that city. Such possibilities have brought the tanning industry out of the woods and set it up near slaughtering centers.

Chemical Tanning.—Modern ingenuity has not stopped there. Chemists have found that bark tannic acid is not an uncontested requisite for making leather. Good leather may be made from various mineral compounds, notably chromium. Chrome leather was first used for uppers of shoes, and was made from goat skins. Since these were nearly all imported,

the industry grew on the seacoast. Its start in Philadelphia gave such a location an early impetus. For years the Delaware River Valley was the only source of chrome leather. While, however, this is still the principal manufacturing region, the industry has spread northward to New Jersey, New York, and New England.

Of late, the principle of chemical tanning has been applied to hides and the manufacture of sole leather. This betokens the passing of bark tanning and sets up a new era in the industry. What further changes it involves no one can foretell.

Shoe Manufacture.—From the building of Pharaoh's Pyramids to the American Civil War, shoe making was done with the same kind of tools, in the same manner, by the same sort of highly skilled intelligent men. It was an industry conducted on a small scale by hand. In America every colony and state and nearly every community had its own shoemakers.

After 1750, however, the Massachusetts north-shore towns, especially Lynn, forged to the front, and soon became the center of an important commercial shoe industry.

In Lynn a shoemaker named Dagys first introduced the now familiar principle of subdivision of labor. This permitted the light sewing upon uppers to be done by women with whom the commercial ports and the hill farms abounded. The men's work was also subdivided; the cutting and finishing was done in small central sheds, while the actual sewing was more often completed in a man's own kitchen or his own tiny shed.

Lynn had the advantage of plentiful raw materials brought to Boston or Salem by the world-searching cargo vessels. Tanning was also a large local enterprise. Lynn and its neighbors following Dagys' example and, utilizing their advantage of numerous women workers, had adopted women's shoes as their principal product. Finished shoes were taken to distant markets by outbound sailing ships; while the whole business was financed by Boston merchants.

After the Revolution, south-shore Massachusetts towns invaded the business when soldier prisoners who had been taught the trade by the British practiced it at home after the war closed. Skilled in making men's shoes, and at home all the year because the south shore has few good harbors and hence did not entice men to the sea, the people of the south shore specialized in making men's shoes.

Boston merchants drew both varieties of shoes to their warerooms and sold them both through the trade channels already established for other commodities. By the time of the Civil War the business was so large that no other trade in the country engaged so many wage-earners and Massachusetts was far in the lead in the number of shoemakers she counted as citizens.

Introduction of Machinery.—Shoe making is essentially a job of sewing together cut parts, and inasmuch as there was no sewing machine of any sort previous to 1850, it follows that shoe making had to be done by hand. But Elias Howe's invention foreshadowed a momentous change. In the hands of Blake, Destouy, McKay, and Goodyear, the sewing machine invented by Howe was adapted to shoe making. These fundamental sewing machines were followed by others in bewilderingly rapid succession, so that by 1900 the industry that fifty years earlier was solely a hand-work business, could be conducted in such a manner that no hand work at all was required.

This amazing mechanicalization, however, did not immediately widen the area of the industry because the new devices presupposed a knowledge of the trade; it took shoe making skill to operate them. Furthermore, the trade channels had been established for more than one hundred years and were hard to change. Shoe making, therefore, has remained largely a Yankee enterprise.

Machinery, moreover, did not result in large-scale capi-

talistic business, as experience elsewhere might lead one to suspect. When the machines were first put on the market, the industry was so entirely one of small establishments that leasing instead of sale was the only basis upon which the machines could be distributed. The system of leasing became fastened to the industry and is still universal. Under it there is little manufacturing advantage in large-scale enterprise, and entrance to the business is so easy that there are always many small-scale ventures. The result is that large shoe factories are the exception rather than the rule.

A remarkable degree of specialization has also followed. This specialization is based upon the sex and age of the shoe wearer, upon the price of the shoe, and even extends to shoe parts. Some factories make nothing but heels. These features, as we have shown, are common with localized industries, but the shoe business exemplifies them to a measure not often equaled elsewhere.

Changing Location of the Industry.—Of late years the old-established shoe towns near Boston are losing their pre-eminence. With employers weak and labor skilled and localized, unions have become so strong as to be autocratic. To escape their exactions, many employers have moved their works to towns where the employer may rule his own plant.

More important than this cause of loss to the old centers is the movement of the industry into the middle west. Nearness to market is the controlling factor in this migration. St. Louis shoe factories can sell shoes more cheaply to Nebraska farmers than can Brockton, handicapped by the long railway journey between Massachusetts and Nebraska.

The Paper Industry.—Raw materials and labor were the first great influences in American paper manufacture; later machinery played the leading rôle; and more recently changes in raw materials have had a most marked effect on the methods

and place of manufacture as well as on the general organization of the industry.

Rags as Raw Materials.—The ancient raw material for paper making was linen rags. Linen cloth was a Dutch or German product instead of British; hence it was in Pennsylvania where Dutch and German refugees were settled that the art of turning linen rags into paper was known and practiced. Following the first mill built in 1690 on the Wissahickon just outside of Philadelphia, that city became the principal center of colonial paper manufacture. After the Revolution when it was discovered that cotton rags could be substituted for linen, the industry became important in New England, using the cut ends and wastes of the cotton factories as raw materials.

Introduction of Machinery.—In 1825 the Fourdrinier machine was first introduced into American paper making. Down to the present day this machine is little different from the first one demonstrated in France in 1799. It has been made longer, wider, and quicker in its operation, but fundamentally it is unchanged. Thrust into our paper industry in 1825, it effected a revolution. As it was large, heavy, and fast running, it required large amounts of power. It was also voracious, and consequently induced mechanical improvements in the preparation of the pulp.

The machine, therefore, impelled a search for power sites upon large rivers. At Holyoke, the Connecticut River—New England's mightiest stream—in falling 70 feet in two miles, and adding volume to head, creates New England's greatest water-power. Here the paper industry was housed, and for many years Holyoke was our chief paper-making city. It still leads in the manufacture of writing paper made from rags.

Wood Pulp as Raw Material.—But our principal use of paper is for newspapers and periodicals. The essential factor

in these fields is cheapness, and rag papers are expensive. After diligent search it was found that a serviceable cheap paper could be made from spruce, hemlock, and poplar wood. These woods can be pulped by mechanical grinding or chemical digesting. Ground pulp is weak but it is cheap and can be used for the bulk of the pulp, which may then be strengthened with stronger chemical pulp or rag pulp. Large output of paper, then, depends on mechanically ground wood pulp. Large water-powers near forests consequently became the main consideration in paper manufacture. The business has moved away from the cities into the north woods. The increased scarcity of wood in this region may compel the paper industry to move to the west or Canada; or to discover a new raw material.

Large-Scale Enterprise.—The development of these remote sites, together with the purchase and maintenance of forest reserves for raw materials, calls for heavy capital investments. This has led to large-scale corporate enterprise easily combined in gigantic, almost monopolistic centralized control. The International Paper Company is the paper industry's counterpart of the United States Steel Corporation in the iron business.

Food Products—Simple Processes.—Judged by the value of products, the industries that prepare food lead in America's manufacture, but this fact gives an altogether misleading impression of their importance. Their value is largely that of the raw materials because the manufacturing operations add but little to their worth. In general the manufacturing processes are simple, using machinery operated by unskilled labor. In most cases perishable raw materials are treated in such a manner, usually by drying or canning, that they can be preserved indefinitely.

Therefore, the factories are as widely scattered as the raw

materials and are as a rule conducted upon an exceedingly small scale. This is generally true in regard to canneries, whether they be for tomatoes near Baltimore, for corn in Maine or New York, or for salmon along the Columbia River.

Meat-Packing.—There are at least two exceptions to this rule; meat-packing is a large-scale business, and so usually is flour milling. Meat-packing is a big business because it is most economically transacted where it may employ the principle of the subdivision of labor. Furthermore, an added profit is obtained if by-products such as fertilizers, glue, lard, oleomargarine, sausage, and soap are manufactured where their raw materials, meat wastes, are produced.

To run such a business with all its corollary activities requires a large investment of capital, hence meat-packing is not conducted for the most part in small plants. The industry is localized at Chicago because that city is nearest the corn and grain belts where the animals are fattened. It does not pay to ship live cattle or hogs to eastern markets to be slaughtered, because they lose weight for every mile of travel. Instead, the animals are sent the short journey to Chicago where they are killed; meat and preserved products then are shipped to the eastern market. Slaughtering is done in a large way at Chicago rather than in a small way upon the farm, because Chicago can draw upon a wide area and hence need never lack for raw material. Furthermore, in a large city the labor necessary to run the plant is easily obtained. Although Chicago does a quarter of the nation's meat-packing business, there are similar although smaller concentrations of it at Kansas City, South Omaha, St. Louis, Denver, Spokane.

Flour Milling.—Flour milling is likewise a large-scale food industry. In this case machinery plays a large part in the manufacturing process. Consequently the industry utilizes considerable capital, tending to make it relatively large-scale.

Flour is most closely associated with the city of Minneapolis, because that city is a central point in the grain-growing area on the edge of the greatest spring-wheat section in America—the Red River Valley of Minnesota, North and South Dakota, Manitoba, and Saskatchewan—and possesses an admirable water-power site. Since the railroads, too, charge a relatively higher rate for the shipment of wheat than of flour, this tends to reduce the distance that wheat travels and extends the journey of flour. In other words, flour is made usually as near the wheat fields as possible.

Tendency Toward Large-Scale Enterprise.—All food industries tend towards large-scale operation in order to gain economies in manufacture and marketing and also to eliminate the chance for failure. The raw materials fluctuate greatly from year to year, bringing great risk of loss for a small plant. A large plant can equalize its losses over a long period of years and so withstand a bad season. The present-day typical, small food plant therefore bids fair to be replaced by larger operations. The Heinz works in Pittsburgh, and the Campbell Soup plant in Camden, New Jersey, are illustrations.

Automobile Manufacture.—The making of automobiles, since it combined the construction of gas engines with the building of coaches, sprang up in both these branches of manufacture. It passed rapidly through the stages of small-scale experimental enterprise to settled, large-scale, specialized business.

Since the principal raw materials for automobiles are iron and steel, it became advantageous to locate near the chief source of these commodities, which, as we have shown, is coming to be the region of the Great Lakes. It follows that automobiles can be most advantageously made in the neighborhood of the lakes. This district also is near the center of populations in the United States; and inasmuch as automobiles

are sold f.o.b. factory, it is desirable to put the plant as near the center of its market as possible.

For these reasons, together with the impetus of an early start, Detroit, Toledo, Cleveland, Indianapolis, and Buffalo have become leading automobile makers.

So rapidly has this industry adopted standardization of materials and parts and developed specialized automatic machinery, that cars have been remarkably improved and cheapened. The large American market with its unsatisfied craving for cars has made prodigious production possible, and this in turn has led to standardization and special equipment in the automobile factories. Our superiority in standard quantity production of cars, especially the cheaper ones, has enabled us easily to capture foreign markets.

As a result of these factors the automobile industry, though only twenty years old today, is listed among the first five principal manufacturing enterprises:

Moving Pictures.—Moving pictures, another new industry, have likewise shown the familiar attributes of infancy and maturity. Small-scale, scattered, individual enterprises have been succeeded by large corporations almost monopolistic in their hold on the business.

Los Angeles County, California, shows a high degree of localization of this industry, inasmuch as 100 operating companies, comprising 52 producing corporations, located there account for 80% of the nation's output of "movies." Los Angeles has attained this pre-eminence because its climate affords a maximum of clear brilliant days in which pictures may be taken. Furthermore, the environment of Los Angeles permits the greatest variety of "locations," in that ocean, mountains, gardens, desert, blossoming trees, and snow, all can be reached any day of the year. The country's moving picture business amounts in value to 150 million dollars a year, a sum that classes it among the most important manufactures.

CHAPTER XI

MARKETING MANUFACTURED PRODUCTS—THE SELLER'S MARKET

The Rise of Distributive Specialization.—For a century after the first settlements were made in America, there was no need for a special system of getting manufactured goods into the hands of consumers because each household produced goods for its own consumption.

There was no power machinery and only a few simple tools in existence, such as spinning wheels and knitting frames. Raw materials in bulk were nowhere available, and a specialized artisan class was unknown. Roads were merely bridle paths, and postal communication was in private hands subject to long delay and great expense in delivery. Except at the sea-ports, and cities reached by navigable rivers such as Hartford, Trenton, Philadelphia, Baltimore, and Savannah, there was no way for the towns, hamlets, or homesteads to keep in touch easily with the outside world.

Under these conditions each household was forced to limit its consumption to what it could produce for itself, and of course no specialized marketing organization was required or permissible. At some of the ports and river cities foreign-made manufactured articles were brought in and sold directly to city consumers by means of public auction. These auctions were not specialized according to commodities, but offered everything which each succeeding incoming vessel brought.

Beginnings of Subdivision of Functions.—During the second hundred years this simplicity, almost barbaric in its

crudity, began to yield to a more complex mode of life in which the beginnings of subdivision of functions were made.

Wandering skilled craftsmen such as shoemakers, weavers, and tinkers, relieved the households of the necessity of practicing certain trades, although the work was done upon the consumer's premises and with the consumer's materials.

Pedlers.—Likewise pedlers traveling by foot, on horseback, and finally by wagon, brought household utensils, laces, and pieces of dress goods to the consumer's door. These pedlers are especially significant because they mark the beginning of a specialized marketing system. They took small, light wares manufactured in New England households, particularly in Connecticut, and carried them to every village and home.

This outlet for "Yankee notions" was the direct incentive for the development of specialized manufacture in Connecticut of tinware, brass goods, hardware, clocks, watches, pins, hooks and eyes, guns and pistols. The frontiersman came to depend on the pedler to supply him with these and like commodities. The cloth that pedlers sold was picked up by them at auctions of foreign goods in the port cities, or sometimes was taken in barter at the households where the pedlers stopped.

Every improvement in transportation by water and by land, whether it affected coastwise shipping, traffic on rivers and canals, or travel over roads and turnpikes, enlarged the range of the pedler's activities both in territory and in articles carried, so that by 1800 he had a recognized important place in the business life of the country.

Merchants.—Meanwhile the improvements and enlargements of transportation facilities invaded the household economic organization in other ways. Commerce permitted specialization of farming in the south and west and of household manufacture in New England where the commerce carriers were owned and where farming was relatively difficult.

A merchant class appeared in New England and the Middle Atlantic colonies. These merchants bought shoes, hats, metalwares, sugar, molasses, rum, and manufactured wooden articles from the household producers, and forwarded them to the plantation or frontiers where they were needed. At first the merchants themselves bought directly from the producers, and sold directly to consumers by means of the ship captains, but eventually middlemen appeared at both ends of the trade.

Storekeepers as Middlemen.—In the producing communities storekeepers appeared and in time began to act as intermediaries between the household manufacturers and the merchants. The storekeepers took manufactures in exchange for other goods, and when sufficient quantities had been collected, forwarded them to the merchants at ports. Some of these storekeepers eventually became merchants themselves, others grew into wholesalers and jobbers, and a few set up as manufacturers after machinery was introduced.

At the plantations or in the frontier villages storekeepers also began in business. These men bought from the ship captains, or directly from the merchants and sold to the consumers of their own neighborhood. Where the stores were located at focal points, they gradually became distributors to other stores nearer the customers and thus finally developed a wholesale business.

"Factors" as Middlemen.—Before these things happened, however, another intermediary appeared, namely, "the factor." This man secured raw materials at the ports or by traveling through the country from house to house. These raw materials he distributed to household workers, and eventually collected in finished form. The completed product was sold by the factor to direct consumers, to storekeepers, or to the merchants engaged in commerce. The "factors" evolved into manufacturers or into wholesalers.

Spread of Specialized Functions.—With the growth of these distributive agencies, household independence was broken down and specialization developed in agriculture, in manufacture, and in the distribution of the products of one of these industries to the producers of the commodities of the other.

Further inroads were made upon the household economy by continual specialization of manufacturing. For example, fulling mills for finishing wool cloth everywhere appeared, taking this skilled heavy work out of the homes. Likewise, long before machinery was known collections of artisans working under one roof and supervised by an employer were familiar organizations in the textile, leather, and hat trades. For the most part these forerunners of the factory system dealt directly with the consumer, and in fact worked upon direct order with materials furnished by the consumers; but a few were large enough to require indirect dealings through merchants and storekeepers.

Despite these multiplying complexities, until 1790 the household economy nevertheless remained dominant. The need, therefore, for a distributive mechanism was slight and consequently a specialized distributive organization was but barely foretold by existing agencies.

The Industrial Revolution.—In 1790 at Pawtucket, Rhode Island, Samuel Slater started the first successful factory in America. It was confined, however, to the spinning of cotton yarn which was sold to housekeepers to weave into cloth. But dozens of other cotton yarn factories began business in New England, New York, and New Jersey. In 1814 a power loom was installed in a Waltham factory, thus beginning the first *complete* factory enterprise in America.

These events of 1790 and 1814 inaugurated the industrial revolution in America. Between 1814 and 1880, power

machinery was applied to commodity after commodity. Inventions succeeded each other with bewildering rapidity and factory organization spread with incredible speed.

This complete change in the method of manufacture was accompanied by equally amazing progress in transportation and communication facilities. Immigrants poured into the country and swept across the continent. The old economic order cracked and burst open under the pressure of the vigorous new life within it and a new order emerged. A part of this new order was a distributive mechanism.

The Need for Organized Distribution.—The need for such a mechanism was created by the separation of the producers from the consumers. Not only did the industrial revolution take manufacturing out of the home and specialize it by commodities, but it also specialized it geographically, as we have shown in Chapter IX. On the other hand, since consumers were scattered over the whole continent, a way had to be created whereby factory products could be placed in consumers' hands quickly and cheaply.

The Sellers Market 1814–80.—The most important single fact that shaped the distributive system was that from the beginning of the industrial revolution until 1880, the nation's demand for manufactured goods was in excess of the productive capacity to meet that demand. In other words, for two-thirds of a century we lived under the condition of a seller's market.

There was no incentive, therefore, for the manufacturers themselves to cater to the consumers' whims, for the consumers eagerly took whatever was offered. Under these circumstances the manufacturers bent all their energies and used all their capital in increasing production. They had neither time, means, nor inclination to develop a scheme to get goods to the consumer. This had the effect of making manufacturers think

more of what would sell at a profit to themselves and to middlemen than of what would be most serviceable or desirable to consumers.

Mill Agents.—As we have shown, merchants had been distributors before modern factories existed. These merchants were the first American capitalists and in many cases the early mills were financed by the merchants wholly or in part. Some of the merchants contracted to take over the whole output of the factories in which they were financially interested. This was satisfactory to the factory operators, for it removed from themselves all responsibility for marketing their own products—a thing they knew nothing about—and permitted intense application to their paramount production problems.

Thus the merchants became mill agents and gave up their commercial activities to concentrate upon their new business. The agents sold directly to general storekeepers, or indirectly to subagents located at strategic distributing points, and these in turn dealt with general stores. The storekeepers bought by visiting the warehouses of agents or subagents or sometimes received goods from the agent upon consignment.

In some trades the product of one factory must go to another before it is ready to be forwarded to consumers. For example, if a mill specializes upon yarn, this must ordinarily be sold to a cloth maker, although some yarn goes through intact to consumers who use it for hand knitting, embroidery, and the like. Again, cloth itself is bought by manufacturers who make it into sheets, pillow cases, and the like if it be cotton, or into clothing if it be wool.

It was the agent's business to connect his mill or mills with these outlets. Frequently an agent acted for both the primary and secondary manufacturers.

Wholesalers and Jobbers.—But not all mills were financially obligated to merchants. These independent mills

hesitated to sell all their output to one agent because such a practice gave to the agents power to dictate to the mills. Instead, the independent mills dealt with several wholesalers and jobbers each of whom took only a part or a specified part of the mills' product.

Some of the wholesalers originated from merchants who did not confine their business to one mill; others grew from storekeepers who gradually forsook retailing for wholesaling. A wholesaler was much better situated than an agent because he could specialize on one class of goods or trade if he saw fit; or on the other hand could handle a much wider variety of products from various mills than any one factory could turn out.

Since the wholesaler was more satisfactory to the manufacturer, and strategically better placed than the agent, the wholesaler or jobber eventually became the typical middleman. As soon as a manufacturer could free himself from the financial obligations to an agent, he turned to wholesalers and so caused the agent to disappear. In many cases the agent became so involved in the money aspects of manufacturing, that he had to become the manufacturer in order to protect his investments. Ceasing to function as an agent himself, he did not connect with another agent but turned to the wholesalers.

From these different causes, agents little by little were eliminated and wholesalers were left alone in the field. Today only the textile and chemical industries retain the agent as a typical middleman.

The Wholesaler's Functions.—Originally the wholesaler had a larger list of functions than is now common. It was his business to assemble, grade, store, transport, and sell the products he bought from many manufacturers. In addition he took upon himself most of the risks of distribution, and financed both the manufacturer and the retailer between whom he stood as the connecting link.

But progress in business has been marked by a subdivision of labor or specialization of function that in effect has removed from the wholesaler some of his functions and reduced the importance of others.

Most of the financing of manufacturers and retailers is now assumed by banks or trust companies, although the wholesaler does help the retailers by selling to them on thirty or sixty days' credit—occasionally ninety days—and aids the manufacturer by honoring drafts. However, instead of meeting these obligations out of his own resources as he once did, the wholesaler now most frequently is himself sustained by banks.

The risks of transportation, fire, theft, and the like are generally borne by insurance companies rather than as formerly by the wholesaler. Likewise express companies, railroad, and the parcels post perform the functions of transportation. So, too, storage companies relieve the wholesaler in whole or in part of his obligation to hold goods until they are needed. Even the selling function of the wholesaler is partly assumed in some instances by the manufacturers, or by specialized advertising agencies that the manufacturer employs.

Hence the modern wholesaler is not such a vital link in the marketing chain as he once was. The principal functions of the present wholesaler are assembling, grading, and selling, with some emphasis also on storage, risk taking, and financing. Principally the risks due to change of style or price are now carried by the wholesaler.

Wholesalers' Aid to Manufacturers.—For the manufacturers, the wholesalers provide corps of trained salesmen who cover a wide territory much more intensively than the manufacturers could afford. As an instance, a hosiery manufacturer could not send his own salesmen into remote retail stores where a sale was problematical, but a wholesaler can well

afford to do so because his salesmen not only have hosiery to offer but many other types of dry goods. Not only is the failure to sell one product not a complete loss of the salesman's time, but every product sold reduces the cost per unit of each thing marketed.

Another service the modern wholesalers render manufacturers is the relief offered in respect to retail credit. Since there are some 750,000 retailers in the country, it would impose a great burden on manufacturers to maintain credit departments to keep track of all these individuals. Furthermore, if each manufacturer were forced to do so, there would be a tremendous national loss in duplication of effort. The wholesalers, each dealing with a few hundreds of retailers, can guard easily the extension of credit, and since the credit is established for the whole store, it covers the whole range of items that the wholesaler sells the retailer, instead of the one article, or few at most, which one manufacturer would have for sale.

Retailers, too, are notoriously slow in their payments, whereas wholesalers pay their bills more promptly. Hence by dealing with wholesalers, manufacturers can turn their goods into money more quickly than if they sold directly to retailers. In this way manufacturers may do a larger volume of business with a smaller outlay of capital.

Wholesalers, furthermore, are in a better position than either manufacturers or retailers to gauge business trends. The manufacturers are too far from the consumers to know accurately changes that are taking place. To be sure, many large and some small-scale manufacturers do employ experts to ascertain these facts; but much expense is entailed, and often the facts are too slowly gathered or inaccurately judged because of the lack of first-hand contact.

On the other hand, retailers are seldom able to distinguish between local and general occurrences, while the wholesaler is sufficiently removed from local events to view them in proper

perspective. The wholesaler therefore is able to give valuable advice to manufacturers and retailers alike concerning business movements.

Wholesalers' Aid to Retailers.—For the retailers the wholesalers assemble and grade the products of scores of manufacturers. They act as reservoirs into which manufacturers irregularly pour goods which are then regularly fed to retailers in smaller quantities. Since a retailer's profits are proportional to the speed with which he can convert goods into cash, it does not pay to carry large stocks on hand.

The retailer relies upon the wholesaler to supply small quantities of articles at the time the retailer needs them. The retailer must choose between putting his capital into large quantities of a few varieties of commodities, or into small quantities of a large variety and replenishing frequently. The latter policy is the profitable one, not only because it yields a higher percentage on investment but also for the reason that successive arrivals of fresh goods stimulate the sales force of a store. Wholesalers permit retailers to practice this economical method of merchandising.

The Retailer.—As has been indicated, the retailer follows the wholesaler in the marketing chain. The original retail stores were not specialized as to the products they sold but carried everything that consumers needed from ox-yokes and cattle feed to hairpins and pills.

There were few of these general stores in any one community and transportation was so inadequate that there was little competition between the stores in different towns. Consumers were confined to what they could find in their own village store. The stores made their purchases only once or twice a year and then bought in large quantities, usually a year's supply. Consequently the stores carried staple goods for the most part, and style or variety was little if ever considered.

Since the factories were in a state of chronic underproduction, storekeepers were forced to accept what the wholesalers offered, and in turn compelled consumers to purchase whatever the store had on its shelves. The townspeople in their turn bought non-perishable goods at infrequent intervals, but laid in large quantities when they did buy. If variety is the spice of life, many a family or even a whole village was then sadly lacking in savor.

At the stores, only the cost prices were marked on the goods and each purchase was the subject of an extended and often heated debate between the customer and the clerk. A clerk's chief value to his employer lay in his ability to charge top prices for every article sold. The slogan, "Let the buyer beware," was in full sway, and the customer who was disappointed in his purchases had no redress, not even the withholding of trade.

Specialty Retail Stores.—But improvements in transportation and communication, together with advances in productive capacity in the factories, gradually changed the character of retail business.

Perhaps the greatest single result of improved transportation was the introduction of traveling salesmen who carried the wholesalers' offerings at frequent intervals to the general store. Buying in bulk for a year's supply was the first custom to fall. It was followed by the conception of variety within lines, and finally by style in individual products.

When this point was reached it was found that the general store could not provide sufficient space to display or house all the goods in all the lines, varieties, and styles that were offered. Individual storekeepers or clerks discovered also that their interest and abilities turned them to particular types of commodities. Furthermore, it was found that a clerk could not sell kerosene oil to one customer, pink silk dress goods to the next, and oats to a third. Nor could any one store provide all

the fixtures and equipment necessary to sell all the various classes of commodities. So the general store gave way to the specialty shop. At first the separation was crude, as for example into grocery, dry goods, and feed and grain stores. Eventually the subdivision was carried to the extremes now familiar.

Some grocery stores sell nothing but butter and eggs, some dry goods stores specialize on silk goods or linen goods alone, some shops carry infants' wares to the exclusion of everything else; and so on through an infinite maze of specialties. The general store is found today only in remote hamlets or crossroads.

Arcades.—But experience proved that the system of specialty stores was not without demerits. If a customer had a list of dissimilar articles to purchase, much time and energy were wasted in going from store to store. There was a tendency for stores selling similar things to group together but this intensified a shopper's troubles if the items desired fell within distinctly different groups.

To offset this difficulty many cities at about the same time hit upon a similar scheme. A frequented side street, alley, or passageway connecting two main thoroughfares was roofed. Along the sides of the way a number of small specialty stores each separate and privately managed was built. The result resembled a wide central hall with arched roof, from which hall numerous rooms opened, each room constituting a store. This device was generally called "an arcade."

After the idea had been realized in one or two places, other cities that possessed no natural passageway capable of being roofed, actually constructed buildings in which the arcade was incorporated.

The arcade proved an aid to buyers because it brought together in one convenient place a number of stores each specializing in different commodities. But space limitations

within the arcade compelled all of these stores to be small, which made them crowded and cramped or led to extreme specialization of stock. Since the arcades were seldom more than one or two stories high, they wasted ground space and so forced rents upwards. Inasmuch as each store was a private business, there was a waste in supervision and clerk hire, as well as in accounting systems, safes, and similar equipment. Business men searched for a scheme that would grant the convenience of an arcade and yet escape its defects.

Department Stores.—The department store was the solution of the riddle. A department store virtually is an arcade with all the separating walls knocked out, the central hall converted into a central aisle, and the duplication of "overhead" features eliminated.

It must not be supposed that any particular arcade was converted into a department store; in fact the two systems operated side by side for a number of years, and indeed in some cities the department store was never preceded by an arcade at all. What we are trying to show is that the germ of the department store idea in some places first took crude form in the arcades.

Once demonstrated, the department store idea swept the country. It was something new despite its resemblance to the general store.

Advantages of the Department Store to Its Owners.—The special advantages of department stores from the point of view of marketing lay first of all in their buying power. They bought in so much larger volume than the specialty store that special discounts, dating of bills, and similar favors were granted to them. They also were put in touch with "job-lot bargains."

Within the store, minute subdivisions of labor could be practiced and constantly cheaper varieties of labor, especially

young girls, could be hired. In addition the cost of accounting systems, advertising, high-priced managers, and the like could be spread over all the departments and thus reduce the unit cost for each one.

The store being a multiple story building saved rent, for whereas a specialty store must pay ground floor rents, in a department store the commodities that can afford the least rent are housed near the top of the building. Thus a housefurnishing department is usually well up toward the roof in a department store, whereas a specialty housefurnishing store must pay ground floor rentals. The department store as a whole, too, could show a profit even if particular departments ran at a loss.

Advantages of the Department Store to Customers.—As for the customer, department stores could offer lower prices because of the advantages just enumerated. The department store must be credited with the abolition of "higgling" over prices, for the "one-price" system was first promoted by them. The change was made because department stores were too big to higgle successfully, and because higgling wasted clerk time. But these facts should not detract from the wholesome benefit and protection consumers have received from the one-price idea.

The department stores also provided the utmost convenience to shoppers because every person, no matter how varied his wants, could satisfy them all under one roof. Elevators eliminated the need for climbing stairs. Special services in the way of restrooms, concerts, post-office stations, and theatre ticket agencies made the stores attractive. Highly developed delivery services held out an incentive to large purchases either in bulk or variety.

Weaknesses of the Department Store.—These advantages were so great that for a time specialty stores seemed doomed to extinction. But time has shown the weaknesses of

department stores. Their size makes direct contact between manager and clerk almost impossible. Clerk service is not personal but institutional. Despite all the efforts to establish a "house-spirit" to take the place of "the boss," the department stores have never overcome their handicap in size. As a result, department store clerks as a class are notoriously inefficient.

This same "impersonality" applies to the customer; in a department store he is one of a mob buying from an institution, whereas in a specialty store he is Mr. Allen purchasing from his friend, Mr. Bates, the storekeeper. Bates knows Allen, remembers all his little likes and dislikes, and serves him accordingly. Of course, every person prefers to have his individuality recognized and will gravitate to the store where this happens.

In addition to the foregoing, department stores add to their costs of doing business by the many gratuitous services they are forced to render. In proportion to sales, the advertising, delivery costs, and labor cost of a department store are all higher than the specialty store.

The buying power of the department store has been duplicated recently by specialty stores through buying syndicates. As a result of all these things department stores have not driven specialty stores to the wall.

CHAPTER XII

MARKETING MANUFACTURED PRODUCTS—THE BUYER'S MARKET

Introduction.—From 1814 to 1880 under the dominant seller's market, the usual chain of marketing was from manufacturer to agent or wholesaler, to retailers, to consumers. These links we have dealt with in detail in the previous chapter. Although this chain has been maintained and even strengthened since 1880, nevertheless fundamental market conditions have changed, and with the change new forces have been brought into the marketing processes. These things are therefore important to consider.

The Buyer's Market.—The primary cause for upsetting the marketing order that had been established by 1880 was the change from a seller's to a buyer's market. The effort that had been expended upon production to improve machinery, processes, and management previous to 1880 began to show in results. Output caught up with consumers' demands. Furthermore, the great yearly increase in population began to lessen. With the disappearance of desirable free land, one large incentive to immigration or large families was eliminated. The passing of free land was felt in every department of our national existence but nowhere more so than in the release of pressure upon the production and marketing system. The release of pressure came, however, just at the time when this system had begun to accommodate itself to the pressure.

In effect our productive engine began to race. Coincidentally the accumulative results of improved transportation and com-

munication got through to the consumer and gave him advantages in purchasing that he had never before possessed. He could select from larger, more varied stocks in which style played an important rôle, and he could pick and choose from a number of sellers.

By 1914 the position of the consumer and producer had been reversed from what they were a hundred years earlier. During the war years that followed there was a temporary reversal to the seller's market, but when the war was over the buyers again came into power and with increased potency because war stimulation had greatly enhanced productive capacity.

During the last forty years consumers have not competed for the little goods available but producers have struggled with each other to get the consumers to select the producers' particular product from the mass that was being turned out. This situation has shaken the marketing system from manufacturer to retailer and has been the occasion for many new complexities.

Integration of Middlemen.—The first of the reactions to the buyer's market has been the attempt of each of the three important links of the marketing chain—manufacturer, wholesaler, and retailer—to weaken or abolish the other two, or to combine the functions of all three in one company. Some manufacturers have attempted to sell directly to the consumer, or directly to the retailer. Some wholesalers have on the one hand added manufacturing, and on the other retailing, to their functions. Finally, a few retailers have become wholesalers in part and others have in part commenced to manufacture for themselves and other retailers. In short, each unit in the marketing system has sought to integrate.

The general reason for this conflict in the distributive process has been the necessity in a buyer's market of reaching the consumers directly, quickly, and cheaply. Each of the

distributing agencies thought it could accomplish these ends if it assumed all the distributive functions. But aside from this underlying motive, each of the three regular members in distribution had special grievances against the other two.

Manufacturers' Grievances.—The manufacturers found that wholesalers were not pushing their goods. In some instances, too, the wholesalers were selling their own private brands in competition with the manufacturers. In doing so they granted retailers better terms on their private brands and taught the retailer the crafty art of substitution. In addition, the manufacturers found that they were shut off from the retailers by the wholesalers and that the latter controlled the retailers either directly by obligations or indirectly by favors or friendship.

Manufacturers' Aggressive Methods.—The most powerful weapon of offense seized upon by the manufacturers was advertising. Through it they sought to impress upon consumers and incidentally upon retailers and wholesalers wherein the manufacturers' products were superior to similar articles. Consumers' demand would then force retailers and wholesalers to stock the manufacturer's commodity. The advertising was designed also to warn the consumers directly or by inference against substitution, thus blocking wholesaler-retailer connivance in pushing private brands, or advancing the sale of goods of rival manufacture.

Trade-Marks.—Of immense value in this campaign were the devices of trade-marks or distinctive packages, or both. A trade-mark may be registered and thus become private property, but it does not give monopoly privileges over a class of articles as does a patent or a copyright. It is the modern business counterpart of feudal heraldry, the easily recognizable sign of an "individual" product; or of a "family" of products

—that is, a series manufactured by the same concern. Thus the Armour trade-mark identifies a ham and also all the Armour commodities. In business the trade-mark enables goods to be sold by description rather than by sample or by bulk inspection. In practice it permits a housewife to telephone to a store with the assurance that she will get just what she wants.

To fulfil this function, a trade-mark must be distinctive, must suggest without describing the product, or manufacturer, must be easy to pronounce and easy to remember, and must not be a geographic or personal name. Such trade-marks as *Ivory*, *Sapolio*, *Nabisco* (National Biscuit Company), *Tidol*, *Eskimo Pie*, *Old Dutch Cleanser*, *Silvore*, *Sunkist*, and *Laundry-ette*, fit these conditions. On the other hand, the following violate one or more of the requisites: *Bon Ami*, *Houdaille*, *Prophylactic*, *Socony*, *Hoosier*, *Hoover*, *Pyrolin*, *Neolin*, and *Nemo*. As trade-marks are property they are protected by law against infringement, close imitation, or intentional deception.

Distinctive Packages.—Closely associated with trade-marks are distinctive packages. The shape, color, size, and general appearance of the package are important and may be made as suggestive or purchase-compelling as the trade-mark. Indeed, the package may be the trade-mark, as for example, *Log Cabin Syrup*. Of late the makers of Williams Shaving Soap have shifted the emphasis in their advertising from the soap to the box in which it is held. The squat shape of the Nujol bottle is an advertising and selling asset. The red color of the Pall Mall cigarette box sets it apart from other cigarette packages. After any of these packages have been closely identified with a product, the original owner develops a property right in it which the courts will help him defend.

Advertising a Selling Function.—Regardless of the ways in which advertising campaigns were planned and by whatever

devices they were conducted, they marked an assumption of selling functions upon the part of manufacturers. This selling was done to break through the resistance of wholesalers and get at the consumers—in short, to connect once more the producers with the consumers. At first the wholesalers and retailers resented the practice, especially when they found that manufacturers reduced the margin of profit to these middlemen.

The manufacturer claimed that he was justified in his advertising because it increased distribution and hence lowered production costs. He defended the smaller margin of profit to middlemen on the ground that he had half sold the goods for them and what profit they lost on a unit was more than compensated by the increased volume of the business. To the consumers the manufacturer demonstrated that national advertising was a protection and an insurance of quality; for the maker was made responsible for his wares. Furthermore, enlarged output through advertising benefited the consumer by lower prices, larger packages for the same price (which of course equals lowering price), or better quality without increase of price, or combination of these benefits.

Direct Sale by Manufacturers.—Along with advertising to the consumer, some manufacturers cut through all intervening middlemen and sold to consumers directly. The Fuller Brush Company now does this; and once aluminum ware, typewriters, washing machines, and vacuum cleaners were sold in the same way.

It has been found that this direct sale is most profitable when applied to new untried articles that need demonstration to the consumer. Salesmen's commissions are so high that neither the manufacturer nor the consumer benefits financially by eliminating the middlemen. Indeed, most manufacturers who have tried the scheme have reverted to the regular trade channels.

Manufacturers as Retailers.—Some manufacturers have attempted to increase outlets and decrease distributing costs by going into the retail business themselves. Many of the shoe and candy makers have tried this scheme. But manufacturing and retailing are two separate and distinct businesses, each with its own technique and rules. Success in one is no guarantee of success in the other. Combinations of the two tie up capital unduly, and a manufacturer with stores of his own often finds he must depend upon them for his entire outlet, since independent retailers boycott his product. Competent managers for the manufacturer's retail stores are hard to secure and harder to retain. Consequently many manufacturers who have opened stores have regretted the move.

Manufacturers as Wholesalers.—More manufacturers have attempted to be their own wholesalers than have tried to become retailers. The same objections hold as regards wholesaling as retailing, but others are added. To be successful in this scheme a manufacturer must generally make varied lines, be already on the basis of large-scale production, and have a large amount of capital to invest in the wholesaling enterprise. Since the purpose of entering the wholesale field is to gain wider distribution and hence lower distribution costs, the manufacturer must employ a large selling force to penetrate all the desired retail territory. Unless he has a varied line to sell, he must necessarily omit some of the small remote places that the ordinary wholesaler can afford to visit.

In many instances manufacturers have set up regional branch houses that were virtually wholesale organizations. In fact some of them have been known to handle products not manufactured by their own organization.

There was no special advantage to consumers or retailers when manufacturers became their own wholesalers. The only advantage to the manufacturer was the control of one vital channel of distribution. Not only did he save nothing in costs,

but often he found his costs higher than regular wholesalers' because spread over smaller volumes and smaller varieties of units. Consequently, although the scheme has proved practicable in some instances, it has not resulted in the obliteration of independent wholesalers.

Frequently branch houses have been installed without any intention of eliminating wholesalers. They sell to wholesalers. The advantage in this variation from the usual custom lies in the saving of transportation charges by bulk shipments to the branches which then ship in smaller but more regular amounts to wholesalers, just as the wholesalers in turn do to the retailers. Goods are sometimes ordered through a wholesaler but shipped direct to the retailer from the branch house, thus saving one set of transportation charges and two sets of handling costs as well as saving storage charges by the wholesalers. This latter practice is known, however, among manufacturers who have no branch houses.

Wholesalers as Manufacturers and Retailers.—Of course, wholesalers were alarmed and angered by the invasion of their business field by manufacturers.

They also had complaint against the retailers. As the latter increased in size they often attempted to save the wholesalers' profit by direct purchase from the manufacturers. Since the big retailers' orders were as large as wholesalers', the manufacturers gave them the same treatment and price concessions as wholesalers. This alienation of the best trade from the wholesalers left them with only the multitudinous small stores as customers.

As a counter move, the wholesalers began retailing to some of the regular retailers' best customers, such as hotels, clubs, fraternal orders, and public institutions. Some wholesalers also opened retail stores of their own. The wholesalers' retaliation against the manufacturer was his entrance into manufacturing on his own account or the creation of his own private

brands. Both as a manufacturer and as a retailer, the wholesaler was at a disadvantage because of his lack of special knowledge or experience, so few of these experiments proved profitable.

With his own private brands, the wholesaler's career has been more checkered. On the positive side his close connection with retailers and even consumers has been in his favor, and made his brands preferred sometimes to those of manufacturers. His guarantee coming from a known source had more weight than that of the unknown manufacturer. This advantage, especially locally, has been advanced by some wholesalers by intensive advertising of the private brands. Seemingly it has made no difference to retailers whether or not the wholesaler actually manufactured his own brands; his trade-mark was sufficient surety. Inasmuch as private brands generally carried a higher profit to retailers than manufacturers' trade-marked and advertised wares, the retailers have been prejudiced in favor of the wholesaler's brands.

Upon the negative, the fact that some wholesalers' brands were merely surplus stock of manufacturers, or the "seconds" and lower grades of goods whose first quality alone was trade-marked by the manufacturers, has operated to discredit wholesalers' private brands. In a few localities enough public feeling has been aroused against them to make them the subject of legislative consideration; as yet, however, no law has been enacted to curb them.

Retailers as Wholesalers and Manufacturers.—Some retailers have been so well placed geographically, and fortunate financially that they have become to a greater or less degree functioning wholesalers. A few retailers act as wholesalers intermittently as opportunity to buy a good job-lot presents itself. Whenever this bargain was too great in volume for a retailer's own store, he has disposed of part of it to other retailers. Even small-scale retailers have indulged in this

practice. For the most part, retailers who have become wholesalers, especially when this function was regularly added to the retail business, have been owners of large department stores. Marshall Field's of Chicago is a case in point.

Again, a few great department stores have added manufacturing to their regular functions. Generally this feature has been confined to a few lines used as "store leaders," or as competitive checks upon wholesalers and manufacturers. Once in a while retailers have been forced into manufacturing in order to secure particular classes of goods. Such stores as Wanamaker's, Macy's, and Strawbridge and Clothier's, all have manufacturing departments. Once in a while it is found that even small-scale retailers are carrying on manufacturing functions.

Such practices by retailers are not likely to become universal because as a rule manufacturing and even wholesaling can be done most cheaply by those who specialize in the one or the other.

The Old Channels Retained.—After a quarter of a century of effort of each unit to assume the function of the others, it has been found that each performs a distinctive service, and that each profits the most when it specializes in one group of functions. Nevertheless, out of the welter of contentions some new features are emerging. Through advertising, manufacturers are taking over part of the burden of selling which once rested solely with the retailers and wholesalers. Likewise wholesalers are finding it profitable to sell in part by means of advertising.

Manufacturers and wholesalers both are realizing that sales effort does not stop with advertising in periodicals, and calls of salesmen. They know that a certain amount of education of retailers is necessary. Services in the way of suggestions regarding store accounting and store management, demonstrations, special window displays, and aids in advertising in local

newspapers, are all part of modern selling. These burdens lie upon manufacturers primarily but also upon wholesalers.

Market research is also a requisite of up-to-date selling by manufacturers. This research is divided into analysis of the product, analysis of the market, and investigation of sales channels. These together determine the sales and advertising policies and are reflected in factory production, finance, and administration. Distribution is becoming scientific and less a matter of guesswork, habit, or mere convenience.

Mail-Order House.—The most unique feature of our American distributive organization is the mail-order house. The fundamental reason for the existence of mail-order houses has been the pioneer mode of life of many of our inhabitants. Living upon isolated homesteads remote from towns, and even inimical to them, many farmers have had wants to satisfy without any ready-to-hand agencies to fill the necessity. The nearest towns have alienated the farmers by years of hostilities due to clash of interests and differences of race or social position. The townsmen too often have looked upon the farmers as so many suckers to be hooked, and the farmers on their part soured by their treatment at the hands of townspeople have failed to realize the functions of the towns in relation to farms.

Against this background of mutual distrust and misunderstanding, the facilities of communication for the farmers have been improved by means of railway express companies, rural free delivery of mail, and the parcels post system. Into this situation the mail-order house has injected itself.

Although there are other types of selling by mail, the typical one is the house that sells by issuing a bulky, profusely illustrated catalog in which all sorts of commodities are tersely and attractively described. To the rural dweller this catalog has had a peculiar fascination. It offered him a wide variety of merchandise, much wider than the stores of the nearest

towns. It gave him a chance to buy things that would be different from his neighbors and so satisfied his primal human instinct for individuality. Furthermore, "the wonder book" seemed to quote prices that were distinctly lower than the nearest retailers. Letters from the mail-order house were cordial and personal in tone and both the catalog and the letters guaranteed satisfaction with the goods or refund of the purchase price. The result has been that the leading mail-order houses have each done a business of more than a million dollars a day.

Advantages of Mail-Order Houses.—The special advantages enjoyed by mail-order houses have been their enormous buying power, rapid turnover of goods, cash basis of sale, and minute subdivision of labor. Retailers have regarded them with undisguised fear, for they seemed to threaten the retailer's very existence.

Weaknesses of Mail-Order Houses.—But mail-order houses have weaknesses in competing with retailers. These same points have been sources of strength of a retailer, although often unrealized by him.

The mail-order house cannot, like the retailer, offer physical inspection of merchandise. Since we all like to see and feel the things we buy, the retailers here have a most valuable advantage. Deliveries from mail-order houses are always delayed, whereas a retailer usually can give a customer what he wants at once. The prices of mail-order stuff are seldom really lower than a retailer's if quality is considered together with cost of delivery. This is due to the fact that despite large buying power, it costs a mail-order house as much to do business as a retailer. Advertising costs, from six to ten times as great as the ordinary retailer's, offset most of the advantages of a mail-order house. Then, too, the labor of a catalog house, while subdivided and cheap, is grossly inefficient and

notoriously high in turnover. The personal service of a retail store if properly exercised may go far to undermine the attractions of a catalog, and local pride may be called upon to defeat the distant and intangible concern that sells by mail.

Finally, there is no reason why local retailers cannot put in mail-order departments of their own. Retailers have groped their way to these facts and are now shaping their policies to accord with what they know of the relative strength of their own and the catalog house's position.

Aside from retailer competition now actively awake, the mail-order houses face an uncertain future. They were born of the frontier but the frontier is passing. Good roads, Ford cars, and telephones, seriously threaten the hold of catalog houses upon farmers. If the mail-order house is to continue, it must seek new markets. The most likely outlet for them is among the "white collar" clerk class of the large cities living upon a close margin of income. By making a price appeal to this group, the mail-order house may be able to retrieve the trade it loses among farmers. But the competition of chain stores threatens even this outlet.

Chain Stores.—For the most part it has been the retailers of the middle and far west who have been most seriously disturbed by the mail-order house, but retailers everywhere in the nation have quailed before the chain store.

The promoters of chain stores have sought to combine the advantages of large-scale buying and large-scale centralized control, with small-scale decentralized distribution. The chain store is not a competitor of the department store but of the corner grocery, and the small town specialty store.

Because the chain stores do not buy each for themselves but through a central office, they get goods at bulk prices and with special discounts. Generally their buyer can omit the wholesalers, and purchase at factories at wholesale rates or at even more favorable rates. Being favored customers they

often are able to pick up bargains in surplus stocks at factories.

Since the control of the "chains" is centralized, the real estate, advertising, accounting, and merchandising departments at headquarters are in charge of high-grade specialists. Although this centralization permits the employment of these experts of a caliber superior to what any single specialty store could hope to have on its staff, the charges for the services are so prorated over all members of the chain that they are less than those of specialty stores hiring cheap and inexperienced men.

The standardization of chain store fronts and interiors is both an advertising asset and a reducer of expense. Although all the stores of the chain are combined, yet competition is keen among them, for each store's accounts are kept separately and published to all the members. Prizes and cash bonuses to stores with the best records heighten this internal competition. The selling expense of each store in the chain is kept low by cash sales, the elimination of delivery services, and rapid turnover. In fact the cost of selling in a chain store is about half that of department stores and a third of that of some specialty stores. It is also less than half the cost of selling incurred by mail-order houses.

Most of the chains interchange between their own stores slow-moving stocks; for articles that prove unattractive to the consumers of Oberlin often prove desirable to the buyers of Toledo; and what will not sell in Illinois may be seized in Massachusetts. On the contrary, an independent retailer in any of these places who misjudges his public must sacrifice profits in forced sales or even lose all the money invested in the goods.

The managers at headquarters of a chain may operate a certain unit at a loss indefinitely in order to drive out competition, recouping themselves from units that have no severe competition. Is the chain store therefore destined to annihilate the independent specialty store?

Specialty Stores' Advantages over Chain Stores.—The answer is negative because the specialty stores have certain valuable features not possessed by the chain. Foremost among these is the personal interest of the owner of a specialty store. The chain store unit is operated by a hired manager. Since so many of his functions are directed by superior men at the centralized headquarters, the local manager is generally a man of lower caliber than the man who runs his own store. In truth many chain store managers are men who failed in their attempts to direct stores of their own. No large-scale company has yet devised a satisfactory offset to the enthusiasm, keenness, and value of personal touch found among men who conduct their own small-scale enterprises.

Secondly, chain stores run afoul of local pride. They are not local enterprises and the people look upon them with suspicion, if not with hostility. Unwisely, many chain systems have heaped up this feeling against themselves by refusing to contribute store funds to further local projects, such as church fairs, hospitals, war memorials, public libraries, and town bands. Many persons feel, besides, that money spent in a chain store is carried out of the community. However fallacious this idea may be in economic theory, it is effective as a prejudice against the chain unit.

In the third place, the presence of chain stores has aroused local retailers from their lethargy and forced them into aggressive efficient merchandising whereby they capitalize their advantages.

Finally, retailers have entered associations for the study of retail selling problems, and formed syndicates to take advantage of mass purchases. For these reasons the chain stores have not yet driven all other retailers into oblivion, nor do they appear likely ever to do so.

CHAPTER XIII

TRANSPORTATION—ORIGIN, GROWTH, AND CONTROL

The Place of Transportation in the Economic Order.—

If the most significant characteristic of our present industrial organization is its almost universal enforcement of interdependence in contrast with former individualistic self-sufficiency, then we must recognize as the most powerful factor in bringing about this condition in the United States the system of transportation. Railroads are the most important connectors of places, things, and people. Places, no matter how remote or near, are bound together with railroad lines. Goods are carried by the railroads from regions of abundance to those of scarcity. People, compelled by business or impelled by pleasure to travel from where they are to where they would be, make use of railway facilities to gain their desires.

As Factor in Production.—Directly, transportation is part of the productive mechanism of the nation. Farms, forests, mines, and factories give things the forms that make them useful to men. The marketing organization adds value to goods by enabling them to be used at the place and time where and when they can be most advantageously or satisfactorily employed. To fulfil these marketing functions, the most valuable agent is the railroad.

Transportation therefore increases the value of goods by carrying them from the place where at the time they have a lower rating, to some other locality where the demand for them is greater but the supply less, and hence their valuation is

higher. Since transportation aids in creating this value its function is productive, just as that of a machine that takes a block of wood which men do not want and changes it into matches which men do wish.

As Factor in Consumption.—Indirectly, transportation influences consumption and distribution. One of the limits to consumption is cost. Thus few people could buy Packard automobiles when they cost several thousand dollars to manufacture and hence sold at a high price. But goods that can be manufactured in quantities may be made at less cost each. The number of automobiles, say, that can be manufactured is in part determined by the number of people who can be reached from the factory. By enlarging the area of sale, transportation permits mass production in factories, with the result that the factory product is cheapened. The more recent policy of quantity output at the Packard plant, for example, has been followed by a cut in the price of the car. As a consequence many persons who formerly could not purchase Packards may now do so.

In general, our transportation system has created a continental market instead of a local one; hence the cost and price of nearly all consumable goods has been affected, with the result that our consuming habits are at wide variance with those of our forefathers.

As Factor in Distribution.—Likewise with distribution—a technical term used by economists to signify the returns to the various factors of production—transportation has modified the returns by changing the relative amounts of land, labor, and capital available as well as changing the real worth of the returns by setting new values on goods.

The early waterways and railroads in the middle west raised the return to land—rent—in the west, and lowered rent in the east because the waterways and railroads made western

land and its products accessible, while at the same time reduced the land monopoly of eastern landlords and the relative congestion of eastern communities.

Interest—the return to capital—was increased in *absolute amount* by our transportation system by reason of the greater productivity given to capital through the transportation outlet. Since this greater return built up capital at a faster pace, the *rate* of interest fell because more capital was at hand for investment.

Inasmuch as transportation facilities added to the mobility of labor, they aided in raising wages where labor was previously abundant, and lowering wages where labor had been formerly scarce. But in so far as adequate transportation stimulated all production, it also advanced the total demand for labor and by so doing contributed to an increase of wages. Furthermore, transportation made the workman's dollar worth more by increasing the quantity and lowering the price of the goods the worker bought to support himself and his family.

In summary of the foregoing, we may say that although our transportation system has been primarily influential as a factor of production, nevertheless it has also had its share in consumption and distribution. Transportation therefore may be considered the keystone in the arch of our present economic organization.

Roads and Waterways.—It is worth while to trace briefly the steps by which our transportation system entered into our economic life. Before the advent of the railroad, transportation was confined to roads and waterways. The building of roads was one of the first undertakings by settlers after the primary necessities of existence had been provided. Most of the roads were constructed by local governments, such as the towns of New England, or the counties of the Carolinas, or Virginia; but for the reason that citizens were permitted to contribute labor on the roads in lieu of the payment of road

taxes, the highways were crude and often impassable. In the new country, capital, labor, and experienced road engineers were all lacking.

In hill country the roads generally followed ridges along valleys. These routes were chosen to avoid the dense tree and plant growth alongside the streams, for the vegetation not only rendered construction arduous and costly but provided lurking places for predatory animals and piratical red or white men. Most of farms, for which the roads were built, were located on the hillsides above the valley floor. Valley roads were endangered by flood overflows and impassable mud immediately after floods subsided.

But wherever the ridges ended or were cut across by streams the ridge roads had to dip to the valley. Consequently traveling was a series of hard uphill pulls or wild scrambles down hill. The automobile tourist is painfully aware that even modern highway engineering has not forsaken colonial routing.

Turnpikes.—By the time of the Revolution it had been demonstrated that dependence upon local governments for road construction did not meet the needs of transportation. Accordingly, immediately after the Revolution private companies were empowered to construct and maintain highways. These companies being private ventures and not public enterprises were entitled to collect fees for their facilities. The first of these turnpikes or toll roads was one connecting Philadelphia with Lancaster, started in 1790.

Some turnpike companies, however, received aid from the public treasury. The most famous of those aided by the national government was the National Highway begun in 1806, connecting Cumberland, Maryland, with Wheeling, West Virginia, and later extended to Vandalia, Illinois. The present Lincoln Highway is due in part to recollections of the popularity of the ancient national road.

Following the opening of the Lancaster Pike a craze for turnpike building swept the country; even the raw western settlements of the time, notably in Ohio, Indiana, and Illinois, pledged their faith in their future by heavy investments in turnpike companies.

Pennsylvania, the leader in this type of thoroughfare, was also the state to develop it the most, for more than a hundred companies were formed, and more than 8 million dollars was spent in building nearly 2,500 miles of turnpikes. Indeed, Pennsylvania has never completely abandoned this kind of road, or converted them all into public highways; for some of the old-fashioned toll houses still levy tribute from passing traffic. Nor can New England point the finger of scorn at the Keystone State; some toll roads yet remain in Yankeeland.

For the most part, however, the appearance of railroads quenched but did not extinguish the ardor for turnpikes. Since the middle of the nineteenth century, little if any highway construction—except for a few bridges—has been entrusted to private capital with a toll collecting privilege.

Disadvantages of Limited Facilities.—Freight and passenger travel by land before 1830 was limited to roads, the freight traveling in Conestoga wagons and the passengers in coaches. It was a tedious, expensive, often dangerous mode of transportation. It severely handicapped the expansion of business by forcing it to stay within the confines of local boundaries; it bulwarked provincialism by limiting the interchange of ideas and persons; and it restrained the satisfaction of wants to whatever a circumscribed area offered. Although it was picturesque it was uneconomic, and if the United States had never become possessed of any better mode of transportation the nation would never have been truly great.

Water Transportation.—From the earliest times in our country, land travel has been supplemented by water convey-

ance. In some places river traffic preceded roadways, and even today for local needs around Chesapeake Bay, boating is better developed, and more popular than wagoning or trucking; since the innumerable bay inlets put almost every farm in touch with the water commercial lanes, while at the same time they push the principal land highways far inland.

Waterways now considered too shallow for navigation or encumbered with dams were regularly employed for traffic before the days of the railroad and great factories. For example, the Connecticut River now rarely used as far north as Hartford, Connecticut, was once normally navigated well within the confines of New Hampshire. Where no other boat could ride, rafts pushed by poles were forced into service.

Canals.—Water travel was so much cheaper and easier than journeys overland that men soon turned their attention to improving river traffic by digging canals around rapids or falls. The next step was to build canals where there were no rivers or where the streams were not navigable, or where the water courses did not conform to the needed route. The improvement of rivers preceded turnpike construction but the mania for canal building coincided with that for toll roads. Both crazes were part of a great national movement for internal improvements, the urges being partly economic and partly political or social.

The Principal Canal Systems.—At its height the canal fever had three main manifestations: (1) the connection of the anthracite coal fields with tidewater; (2) the establishment of through water routes between the Atlantic Ocean and the middle west; and (3) the joining within the middle west of the Ohio River or the Mississippi River systems with the Great Lakes.

To accomplish the first of these purposes canals were built in conjunction with the Schuylkill, Lehigh, Susquehanna, and

Lackawaxen rivers, and three separate canals were constructed to join the Delaware with the Hudson.

The east-west canal projects were the outgrowth of the commercial rivalry between Boston, New York, Philadelphia, and Baltimore. Massachusetts in the face of great topographic difficulties proposed a canal from Boston to Troy, there to tap the commerce of the Erie Canal and divert it from New York City to Boston. This canal was never built, partly because of the expense of overcoming natural limitations and partly because by the time the state was ready to start construction railroads had appeared. Massachusetts therefore obtained her western connection by means of the Boston and Albany, running by way of Worcester and Springfield, and the Boston and Maine Railroad, running from Boston to Troy by way of Greenfield and the Hoosac Tunnel.

New York State, favored by nature with a low divide between the Hudson and Lake Erie and possessing two valuable links in the Hudson and Mohawk rivers, took first prize in the canal class by constructing the Erie Canal. The success of this venture forced the other Atlantic states into east-west canal building to offset the prestige of New York City.

Pennsylvania had a worse natural problem than Massachusetts when the Keystone State proposed to join Philadelphia with Pittsburgh and the Ohio River. Her project was part canal and part railway.

Maryland started the Cumberland Canal to join Chesapeake Bay with the Ohio River, but this canal never got outside the state and did not reach even Cumberland until 1850.

In the middle west there were numerous canals built or proposed between the Ohio or Mississippi river systems and the Great Lakes. The Muskingum, Scioto, Miami, and Maumee rivers in Ohio, the Wabash in Indiana, the Illinois and Desplaines rivers in Illinois—all these and even smaller streams were made to serve the ambition for water routes between the three great waterways.

Canals Insufficient Transportation Agencies.—The only outstanding commercial success among all these projects was the Erie Canal, but nearly all the canals for a time at least served to advance the prosperity of the districts they intersected or connected. Many were financial failures so far as the individuals or governments who invested in them were concerned, some because they were too expensively built, some because they were finished just prior to the railroad era and so never had a chance to make the expected earnings. Too much emphasis is placed upon the lack of financial success to investors in canals and too little on the fact that the canals did for a time provide better transportation than hitherto existed, and furnished outlets where almost none were to be had previously. To be sure some canals were well-nigh useless because they never reached the projected terminals.

But canal traffic is slow, and canals themselves are restricted by topographic considerations. Canals alone, no matter how excellent they may have become, could never have made the United States what she is, because vast areas of the country must have been always without canals.

Present Water Transportation.—Although canal and river traffic no longer constitute the principal means of transportation, nevertheless the shipping upon the Great Lakes and along our coasts is so enormous that waterways still are a vital factor in the national transportation system.

Across the Great Lakes heavy bulky commodities such as iron ore, copper, grains, lumber, and coal are shipped in great quantities. Indeed these products are usually carried across these inland seas instead of by rail because water transportation is cheaper for this class of articles.

The coastwise traffic is not so confined to heavy articles but these nevertheless are the mainstay of offshore shipping.

The present excessive pressure upon our railroads tends to create a favorable inclination toward the development of

waterways to relieve the railroads of the burden of bulky, heavy commodities. Since it was the railroad competition that nipped the earlier development of waterways, if railroads now or in the future can be made to favor water transportation it is likely that this older method of carrying goods will revive.

Water transportation cannot be dismissed as of little importance. What we have is vital to our needs, and what we may secure will be yet more essential to our economic organization. Nevertheless at present the paramount transportation agency is the railroad, and has been since it was introduced.

Railways Before the Locomotive.—The advantages of a railway were beginning to be appreciated before practicable locomotives were invented. A track was seen to be a better traction surface than an ordinary road, even when gravity or horses were the only motive power. Just as our street railways used horse-cars before the electric motor was developed, so a few of our earliest railroads were nothing more than horse-drawn coaches pulled along rails. Thus a horse railroad was planned and in part built and used to connect Boston with Lowell, while another was constructed to join Philadelphia and Germantown.

In a few special instances gravity was harnessed to work for man, loaded cars being run down hill. The empties were pulled back sometimes by hitching a cable to the descending cars—a system that may be witnessed today on an occasional mountain incline—and in other cases by attaching horses. One such railroad using mules for the up-grade motive power, gave the mules a ride in the last car of the train when gravity furnished the locomotion for the downhill trip.

At the granite quarries of Quincy, Massachusetts, a gravity railroad was used to get out the blocks that formed the Bunker Hill Monument, and at Mauch Chunk, Pennsylvania, loaded anthracite coal cars were lowered to the river level in this way.

An adaptation of the same idea may be observed in lumber regions where logs are shot down hillsides on a track that is sometimes merely a space cleared of undergrowth, and sometimes made of log skids. The earliest Pittsburgh, Pennsylvania, coal miners slid coal down hill wrapped in buffalo robes for a carriage and with either cleared places or logs for a track.

The Beginnings of the Steam Railroad.—But none of those horse or gravity railways were railroads in the modern sense. Mechanical power is a requisite of a railroad as that term is generally understood. The adaptation of steam-power to locomotion gave us the modern railroad.

The first actual railroad in the United States was the Baltimore and Ohio, but even this one when it was chartered in 1827 was intended for horse motive power. Before its first 13 miles were opened in 1830, locomotives had been demonstrated in England and in consequence the Baltimore and Ohio abandoned its original plans and substituted the new iron horse.

The Charleston and Hamburg (South Carolina), chartered in 1829, was the first railroad that from the initial paper plans to the finished right-of-way was designed for steam locomotives. In Pennsylvania the earliest railroad using locomotives was the parent of the present Pennsylvania system, and was known as the Columbia Railroad built by the state in 1834. In New York the Mohawk and Hudson was opened in 1831, and in Massachusetts the Boston and Worcester began business in 1835.

From 1830 when there were only 23 miles of railroad in the whole country, to 1910 when there was a total of 240,000 miles, railroad building was incessant and prodigious.

Early Opposition to Steam Railroads.—In its infancy the railroad, being a new transportation enterprise, had to combat

the opposition of investors in competitive businesses as well as the prejudices of people inimical to novelties.

Owners of turnpikes and canals, both private and public, vigorously belittled and actively thwarted the ambitions of railroad promoters. Tavern-keepers and their retainers, bound to the interests of turnpikes, canals, and highways, dreaded the popularity of railroads and used all their influence to prevent the spread of the new system of travel. Draymen in towns and freighters overland, two-fisted fighting broods, hampered and limited in every way in their power the development of railroad endeavors. Farmers—of all people in the United States now perhaps the most vitally interested in railroads—gloomily visioning the doom of highways or canals and consequently the elimination of important markets for farm stuff, ruminating upon this obvious immediate effect of railroads upon existing farm business, and unresponsive to or unaware of the enlarged opportunities offered by railroads, blocked railroad charters and protested railroad building.

Other people less personally involved in the new ventures, yet were prejudiced against them. A few said it was sinful to travel at the frightful speed of 15 miles an hour since the Lord's intentions were manifest when he provided men and animals with legs but made them incapable of sustained speed. Some were afraid to ride on the cars and some were made ill by the unaccustomed motion. Others claimed that railroads were dangerous to users—of which they had plenty of evidence—and equally dangerous to innocent bystanders because the trains frightened animals.

Railroad Building.—All such objections, either from vested interests or from portions of the general disinterested public, were short-lived. The railroads soon demonstrated their economic advantages, while habit together with improvements in equipment silenced prejudiced opposition. Instead of obstruction to railroad promotion, there ensued a frenzied

scramble to build railroads as fast as possible, and to extend them into as many regions as they could be enticed or compelled to penetrate.

First, in the thirties the ports were connected with their interior feeding lands; then, in the forties New England was girded with rails. In the fifties the flow of gold from California stimulated all speculative business and resulted in much railroad building in the south and middle west. In this period, too, the Atlantic and the Great Lakes were joined by rail. After the Civil War, in the sixties, attention was paid to transcontinental railroads, the first being the Union and Central Pacific lines joined in 1869. In the seventies this movement was intensified and bore fruit in three more transcontinentals, the Atchison, Topeka and Santa Fé, the Northern Pacific and Southern Pacific. The eighties were the period of most extraordinary building, for the railroad mileage jumped from 93,267 in 1880, to 163,597 ten years later. No other country has ever laid down so much track in such a short time.

From 1890 to 1910 the extensions continued but at a slower rate. Since then, particularly from 1917 to 1920, new construction has almost ceased, and indeed during 1917 and the two succeeding years more track was abandoned than new mileage completed.

1917-18-19	
New construction.....	2,386 miles
Abandoned track.....	3,319 "
Net loss.....	983 "

Building Has Been Speculative.—Throughout our railroad history, until recently, building has preceded demand. Especially in the west, lines were laid down years before profitable traffic was in sight. Furthermore, after the utility of railroads had first been proved, the whole public seemed to go mad for railway expansion. The United States, the various states, counties, towns, and individuals, eagerly offered

to railroad promoters capital in one form or another and special privileges as well.

This wild speculation in future benefits thought to be inherent in railroads often resulted disastrously to investors, and was directly responsible for several of the financial panics that devastated the nation. Nevertheless we must not lose sight of the fact that the stupendous mileage led to the rapid settlement of the continent, bound the nation together in a way vitally important to a republic thinly spread over so much area, and was the principal cause for the existing organization of agriculture, manufacturing, mining, forestry, and marketing. If these results have signified progress, then the incidental speculative losses, no matter how severe temporarily, have been of minor importance.

Latest Developments.—Since 1890, railroad building has taken the form of making double, triple, or quadruple the existing trackage, together with enlargement of terminal or yard facilities.

1890-1907			
Single track mileage increased.....			40%
Second " " "			130
Third " " "			157
Fourth " " "			147
Yard " " "			130

There has also been a more intensive use of the tracks, a fact that is borne out by comparing the increase of mileage with the ton mileage revenue freight or passenger increase.

1895-1905			
Track mileage increased.....			21%
Ton mileage revenue freight increased.....			118
Mileage revenue passenger increased.....			95
1906-16			
Track mileage increased.....			16%
Ton mileage revenue freight increased.....			60
Mileage revenue passenger increased.....			35

Another way of showing the same thing is to state that between 1906 and 1916, when mileage increased but 16%, the

number of locomotives increased 24%, freight cars 26%, and passenger cars 29%.

Railroad Business One of Increasing Returns.—A moderate superiority of increase of use over extension is a sign of railroad health. Tracks and rights-of-way cost thousands of dollars per mile. This investment is a total loss if it is not used at all, but shows successive gains in profit with each added ton of freight or each extra passenger carried—up to the point where traffic causes expensive congestion and delays, or augmented expense for equipment, personnel, and superintendence. Then more tracks, better and bigger terminals, and more equipment are required. Unfortunately, since 1906 our railroads have not been able to make these additions as rapidly as the swelling of traffic demanded.

The reasons for this unhealthy condition are too many, too detailed, and too technical to describe here. It must suffice to suggest that among them are public animosity against railroads for their real or fancied discriminations or unfair practices, the unwarranted juggling of railway securities, the withdrawal of the public from railway investments, the conflicting jurisdiction of national and state regulation, the legal denial of co-operative arrangements between railroads and the enforcement of competition, and finally all the embarrassments or hardships incident to the World War.

Consequently, it is estimated that approximately 6 billion dollars ought to be spent upon our railroads for extensions and increases in equipment, in order to make them adequate for the fullest immediate service as well as to provide for the prospective demands of the imminent future. This expenditure appears necessary despite the fact that we already have about a quarter million miles of track or more than a third of all the railway mileage of the world, representing an investment of at least 18 billion dollars, an amount that ranks railroads next to agriculture and manufacturing in importance.

Railroad Ownership and Regulation.—In conformity with American tradition, our railroad system was built and operated under private control. But as railroads gained strength, size, and power, abuses under private ownership appeared. Discriminations to favored shippers, excessive charges for services, and unwarranted interference with the business and development of particular cities were heaped one upon the other.

Railroad expenditures were sometimes for anti-social purposes, and occasionally against the interest of their own stockholders. For example, railroads have been accused of influencing legislators with money, passes, or other favors. Stockholders have been known to have been defrauded by unreasonable salaries to executives and by the acts of these executives in granting contracts upon excessive terms for railroad equipment or extensions to certain favored individuals or corporations "on the inside."

Financial speculation with railroad stocks and bonds has been proved against persons who controlled railroads. The juggling with railroad expenditures for equipment and betterment, or the payment of dividends out of funds that should have gone for railroad improvement—all these things have been done to influence the price of railroad securities so as to benefit particular market riggers. Scandals, such as those connected with the New Haven, the Rock Island, and the Erie, all have shaken public confidence in unrestrained private ownership of our railroads.

The discredit attached to all these matters has forced a prolonged national discussion to discover ways of avoiding the evils known to exist under private ownership and operation. The remedies suggested have been: (1) government ownership and operation, (2) private ownership and government operation, (3) government ownership and private operation, and (4) private ownership and operation but under government regulation.

Substitutes for Private Ownership and Operation:

1. Government Ownership and Operation.—Government ownership and operation, since it would be the direct opposite of what we have actually had, of course suggests itself. To this proposal there are theoretical and practical objections.

Government ownership would entail a governmental expenditure of at least 18 billion dollars to acquire the roads. To pay the interest on this fund and provide for payment of the principal would entail increase in taxation. On the other hand, railroad securities would then become safe investments instead of speculations.

Government operation is vigorously condemned. It is said that the railroads would become the football of politics; expenditure would be made for political effect and not for sound business reasons, and rates would be discriminatory because particular interests would get the ear of Congress. Two million organized railroad workers also would wield vast political power, enforcing among other things unjustly high wages and short hours, and unwarranted padding of pay-rolls. In railroad appointments question of merit would have to contend with political qualifications.

The practical experience with government in business has not been greatly encouraging, and the special experiment of government operation of railroads during the World War did not win public approval. For these reasons the nation is likely to be reluctant to replace the present railroad organization with that of government ownership and operation.

2. Private Ownership and Government Operation.—The second alternative, private ownership and government operation, is generally considered worse than the first. Capital is now being withheld from railroads by private investors, and would not be likely to flood railroad coffers if private ownership were coupled with government operation. Nearly all the evils of the latter would be present under private ownership as

well as under government ownership, for stockholders would have a weak voice in fixing operation policies.

3. Government Ownership and Private Operation.—

Neither does the coupling of government ownership with private operation seem feasible. The government as owner would have political representation in the private operation. These directors would not know or could but little check the evils possible under private operation. The acts, too, of these government directors would probably be guided more by political exigencies than by economic motives.

4. Private Ownership and Operation under Government Regulation.—

The actual program so far adopted and seemingly likely to continue is the retention of the organization we have always had but adding to it stringent government regulation. Such a course is not only in keeping with our traditions but avoids experimentation with government ownership and operation, an untried plan in this country. Furthermore, vigilant regulation fully empowered by law and supported by the courts is effective in reducing the anti-social practices that have appeared under private ownership and operation.

The grounds for government regulation of this private industry are found in the public aid granted to railroads and the unique nature of their business.

The loans and gifts to railroads from public authorities have aggregated 700 million dollars. In some cases the various governments—local, county, state, or national—have bought the securities of railroads; in others the interest on the securities has been guaranteed; in many others there have been loans or outright gifts of money or land. The first large land grant to a railroad was made in 1850 to the Illinois Central. Between this date and 1871 the total of land given to railroads was 242,000 square miles, an area equal to that of Texas or four times that of New England. Once the state of

Texas in her ardor for railroads gave away 8 million more acres of public land than she actually possessed. Minnesota, Iowa, and Wisconsin gave a fifth of their public lands to railroads; Nebraska gave a seventh, and California an eighth.

In view of these enormous aids railroads were not strictly private ventures but have had a public backing. Recognition of this fact is made in the governmental payment for mail service; for those roads that have been most benefited from the public treasury receive only 80% of the stipulated remuneration. The public right to regulate the assisted roads needs no defense.

Railroads Are Public Utilities.—But regulation limited to these befriended railroads would be insufficient. The right to exercise dominant authority over all roads by the governments rests upon the partially public nature of the railroad business. Transportation has always been held to be a public service. Highways, canals, harbors, and navigable waters have all come under public jurisdiction—why not railroads?

The state, of course, is the supreme authority. Under this concept private ownership has been compelled to yield to the public whenever private ownership conflicted with public welfare. Thus the state has the right of eminent domain, to take private property for public use. But this same right has been permitted to railroads. In using it the railroads have declared that their business is affected with a public interest. If this is true when it is advantageous to railroads, it is also a fact when the public desires to bring the railroads under regulation.

Finally, the Constitution states that Congress has the power to regulate commerce between the states. In so far as railroad traffic is interstate, Congress has a clear right to regulate it.

Steps toward Government Regulation.—Spurred by public wrath against the iniquities of private operation of rail-

roads, the states and the United States have used their powers and rights to bring railroads under public control. The states have legislated in regard to equipment, safety appliances, crews, financial requirements and rates, and have set up railroad commissions to administer the law. Congress, too, has passed similar measures.

The most important early step toward regulation by Congress was the enactment of a law in 1887 which created the Interstate Commerce Commission. Six other acts have followed, all designed to widen the scope of the powers of the Interstate Commerce Commission, to grant it more specific authority, to hasten compliance with its decisions, and to remove particular grievances. The latest act, that of 1920, is the most drastic of any of this legislation. It brings railroad labor as well as railroad management under regulation.

The railroads have complained that they have 49 bosses—48 states and one Congress—each acting independently and without any supreme authority. The Supreme Court, however, in such famous cases as the Minnesota Rate Case (1913) and the Shreveport Case (1914), shows a tendency to make the national authority vested in the Interstate Commerce Commission paramount to a state commission when the two disagree.

The nation, therefore, has embarked upon a thorough-going policy of public regulation of railroads while leaving these to be privately owned and operated. Until this plan proves a failure no other is likely to receive serious attention from the majority of Americans.

CHAPTER XIV

THE RAILROAD SERVICES

Four Kinds of Service.—Turning from the origin, growth, and control of the American transportation system to a consideration of the direct services performed by railroads alone, we find that the services are four in number: (1) the carrying of freight, (2) the transportation of passengers, (3) the forwarding of the mails, and (4) the moving of express. From the point of view of earnings the freight service is the most important to the railroads.

The Freight Service.—In the aggregate about $1\frac{1}{4}$ billion tons of freight are received every year by the railroads of the United States. The average distance each ton is hauled is 300 miles. To do this work $2\frac{1}{2}$ million cars are required, hitched to 50,000 locomotives under the direct or indirect guidance of a million and a half human beings. The source of this traffic is as follows:

Mines.....	55%
Factories.....	16
Forests.....	10
Farms:	
Soil products.....	10
Animal products.....	4
Miscellaneous.....	5
Total.....	<hr/> 100%

Classification of Freight.—Since each one of these sources offers the railroads thousands of different commodities packed in bewildering variety, some to travel to the next station, some across the continent, some half-way round the world; and inasmuch as the articles differ in bulk, weight, value, or fragil-

ity, a system of classification is a first requisite. This is all the more a necessity because there are thousands of shippers as well as thousands of commodities, and the railroads are forced to act indirectly through thousands of agents at thousands of stations.

Therefore the freight expert of a railroad first classifies all articles according to their origin—from mines, for example, or from factories. In each of these divisions he classifies the articles regularly offered as to their bulk, weight, value, fragility, perishability, and the like, as well as the type of package or container, and the special services required on the way, such as icing, watering, feeding, or resting.

Doing this as thoroughly and minutely as possible—and each class contains thousands of items—there will be always some articles offered for transportation which are so unusual that they cannot be classified under any of the normal headings. These things therefore fall in a class by themselves called “special” or “commodity.”

After classification is completed, rates are set as indicated later in this chapter.

Regional Classification.—Once every railroad made its own classification of freight. The result of course was utterly bewildering, and gave opportunity for all kinds of favoritism, chicanery, and unfair practices.

It happens that much of the freight in specific regions of the United States is similar. This led to the proposal that standard classifications be adopted by all the railroads in a given region. Since no one road could determine the classification for all the others, a committee arrangement was desirable. Hence each road appointed experts to represent it on a committee to which was delegated the power to establish a classification which each road promised to adopt. In conformity to this idea three regions became defined: (1) the Trunk Line region, (2) the Southern, and (3) the Western.

The Trunk Line region was that part of the country between Chicago or Cairo, Illinois, and the Atlantic Coast. The Southern region was south of the Trunk Line and the Western, west of it. These three regions differ strikingly in topography, general character of originating freight, length of haul, and direction of travel; hence differences in classification seemed reasonable.

As a result each region had its own committee and set up its own standard classification. At first the committees met infrequently and were large in membership. Lately continuous sitting of smaller committees has become the practice.

A National Standard Classification.—The official classification for each region has for years been published in book form, each region having a separate volume. Loud clamor has been raised by shippers against the non-uniformity of the three classifications and a growing demand is made for one standard freight classification for the nation. Yielding somewhat to this agitation the three classifications have been published in one book since 1919. But this has only added to the agitation for one uniform standard.

The difficulties in the way of such a classification are enormous and readily appreciated when one thinks of the variations between the industries, markets, and topography, say of Massachusetts, Illinois, and Mississippi, not to mention New York State, Iowa, and Texas, or New Jersey, Colorado, and Florida. Yet the obstacles are not insuperable. It seems likely that they will be overcome and that some day we shall have made the complete evolution from hundreds of classifications, to three to one.

Car Movements.—Aside from classification of the freight which they carried, railroads have had trouble in keeping their own freight cars upon their own system. Obviously "through freight"—that is, freight originating upon one system but

delivered over another, sometimes after passing over a third or a fourth—must be kept intact within the car in which it was first loaded, no matter how far from the starting point the final delivery is made. Of course a car could be unloaded every time it came to a railroad's terminal and reloaded upon a car belonging to the next forwarding road, but such a practice would be extravagantly wasteful of effort. Consequently every railroad, except for a short time when railroading was in its infancy, has permitted its cars to wander over the lines of other railroad companies.

This custom, however, permits many abuses. A railroad might be deficient in cars to handle traffic offered and so purposely delay the return of cars belonging to other railroads. Or men to whom carload lots of goods were consigned might find it expedient and cheap to store goods in the car, delaying its release so long as suited their selfish convenience.

Car Accounting.—To check these impositions every railroad employs a "car accountant" to whom is reported daily the movement of every car belonging to the road. The records of the car accountant show the exact mileage per day of every car and its location. In addition, whenever a car leaves its own system the borrowing railroad pays a charge. Formerly the assessment was based on mileage, the borrowing railroad paying three-quarters of a cent a mile for using the car.

But this custom did not put pressure upon a borrowing road to forward "foreign" cars as rapidly as possible, and particularly it did not stimulate a road to hasten a consignee in his unloading. To meet these conditions the habit now is to charge a daily rate for the use of unowned cars, the rate varying from 20 cents to a dollar or more. The railroads comprising the American Railway Association have a contract which fixes the daily charge at one dollar. The car accountant records these charges and periodically the roads make settlements with each other.

It would occur to anyone that these intercompany charges and payments could be made best through a clearing house device similar to the one used by banks for checks. As a matter of fact the British railroads have used such a railroad car clearing house since 1847, and for a short time the Harri-man lines in the United States operated through a clearing house of their own. Since this association comprised so few roads it was abandoned in 1912. One of the present needs of our railroad organization is some such device.

Demurrage.—The delinquent consignee who intentionally or forgetfully keeps cars on sidings unloaded is reached by a tax called “demurrage.” Usually a man is allowed 48 hours without charge in which to remove his goods from a car. At the expiration of this time of grace, fines are levied for each day a car is retained. The amount varies according to the demand for cars and according to whether the car held belongs to the local railroad or a “foreign” one. Other considerations sometimes modify the charge.

Shippers ask that a tax similar to demurrage be levied against railroads for every day a railroad delays in supplying cars to the shipper after a proper request for space has been filed. No such fee now is customary.

Fast Freight Lines.—In the earlier days of railroading some companies were so hard pressed for capital or by the excessive freight offered that they found difficulty in securing an adequate number of cars. Then, too, cars of a special type for particular commodities were uneconomic for a railroad to buy, because the demand for them varied through such wide limits. Finally, railroads had not developed the present system of loaning cars to each other for through freight.

Out of these conditions arose special companies whose functions were to solicit freight business and arrange for expeditious through shipment. These were called “fast freight

lines" and usually had a special name as an asset. In many ways these fast freight lines were the counterpart in the freight business of the Pullman Company in the passenger business—although no one freight company had such a monopoly as the Pullman.

Railroads pay a mileage rental for the use of the cars of the fast freight lines; otherwise the business is conducted as if the cars were railroad property. Some railroads have developed their own fast freight lines as a separate department of their business, just as some roads own their own dining and sleeping-car equipment. There have been instances, too, of two or more railroads owning fast freight lines jointly.

Although these lines filled a real need at the time they were organized, that time has passed. Railroads now cover enough territory, are large enough, and have enough capital to finance completely their freight business. Fast freight lines are a functional "appendix" that ought to be operated upon by some railroad surgeon.

Private Car Lines.—A few shippers with large-scale businesses needing special cars for their products have purchased their own freight cars and rent them to the railroads to carry the shipper's own products. The rental varies from 6 mills to a cent a mile. Once in a train these private cars are handled just as if the railroad owned them. There are about 150,000 such private cars in the country, or about one to every twenty owned by the railroads themselves. The Chicago packers offer the most striking examples of private car lines.

Passenger Service.—While freight service is measured in tons, passenger service is measured in trips; therefore the two are not directly comparable. Our railroads sell yearly about one billion passenger trips. Although these trips aggregate about 40 billion miles, the average trip per person is only about

40 miles. The average ton of freight travels about eight times as far, due perhaps to the fact that through freight is more common than short-haul freight, while more suburbanites are carried by railroads than transcontinental tourists. Suburbanites, however, will find it difficult to believe that railroad statistics show that the average number of persons carried per train is only 76, and that every passenger ought to have not only one but several seats from which to choose.

Passenger Service vs. Freight Service.—The two services, freight and passenger, offer many contrasts. Freight trains for the most part, unlike passenger trains, do not run upon a fixed schedule. Freight has to be loaded, unloaded, and moved; passengers do these things for themselves.

Hence arises an important distinction respecting terminal facilities required for the two services. Railroads often have a dozen freight terminals scattered about a city, conveniently located in regard to the movement of the freight. Each terminal takes up much room with spare tracks, and it must have ordinarily three freight houses, one for inbound, one for outbound, and one for transfer freight, and sidings where cars may be loaded or unloaded directly from trucks. As for the passenger service, no matter how many stations there may be within a city's limits belonging to one railroad, each railroad has but one passenger terminal. This, however, is generally located in the heart of the shopping, hotel, and theater district, and thus the rental charge for the single passenger terminal may measure well up toward the combined rentals of all the freight terminals.

Again, the bulk of the freight moves only in one direction, whereas passenger traffic is about equal in both directions because freight is not intended to come home—at least in the same form—while passengers are expected, like pigeons, each to return to his own roost.

Then, too, most freight moves in carload lots, whereas

passengers average only 76 persons per train. Finally, the measure of the efficiency of the freight service is cheapness, while most passengers disregard the expense of travel and look instead for safety, comfort, convenience, and speed.

Classification in Passenger Service.—As we have shown, an important detail in the freight service is the classification of commodities; likewise in the passenger service there is a classification of traffic, but unlike the freight, the passenger service classification is simple. In the United States we have four classes of passenger service: (1) Pullman service, (2) first class service, (3) second class service, (4) excursion service.

Pullman Service.—The Pullman service corresponds to what is called first class service abroad, while our first class is more like the foreign second class. Pullman cars are not owned by the railroads, but are built and owned by the Pullman Company. The conditions which produced this company were similar to those that gave rise to the fast freight lines.

The Pullman Company supplies the railroads with as many cars as they need, and in the variety called for. These cars are furnished with conductors, porters, and servants by the Pullman Company, and are equipped and maintained by that company. The railroads pay a mileage charge for the use of the cars. This fee is not fixed but is graduated according to the earnings of the car, although a maximum fee is set. The railroads also collect from the passengers riding in Pullmans a surcharge. If the train is made up of all Pullman cars especially well equipped and operated at unusually high speed, an additional extra charge is sometimes collected for travel on this train.

The Pullman Company not only gets a rental from the railroad for the use of the cars but also garners a fare from the passenger. Ordinarily these Pullman fares are not based

strictly upon mileage but upon a zoning system, a flat rate being levied for all travel within the zone irrespective of actual miles traveled.

As long as railroads singly covered but little territory and were devoting their talents and income to consolidations or extensions, there was ample justification for specializing the function of caring for superior passenger traffic by means of a company separate from any one road. Today, on the contrary, many railroad systems are spread over regions so wide that variations in car demand throughout the system balance. Also, as we have shown, railroads are more and more tending toward improvement of service rather than branching into new territory.

Under these circumstances there is less reason for a railroad to delegate its best passenger car service to an outside company. Already some roads in whole or in part possess and operate their own sleepers, diners, chair cars, club cars, and the like. The Hill roads, the Baltimore and Ohio, and the New Haven, all are partly independent of the Pullman Company. Habit, convenience, and lack of capital are the principal bars to a more concerted desertion of the Pullman Company by railroads.

First Class Service.—All railroads provide their own equipment for the other three classes of passenger service. But what is called first class service differs surprisingly on various parts of the same railroad and also with individual roads. Through traffic on the main lines of one railroad usually gets the best equipment in the first class service, while that same road's branch lines have to be content with equipment discarded for main line business. In riding over some of the more remote of these branch lines, one wonders if any car is ever scrapped. Again, the main line of some other road may have equipment comparable to that of the branch lines of a more profitable railroad.

As with equipment, so with regard to speed or frequency of trains. First class service is far from standardized. Yet more than 90% of American passengers buy first class tickets whose prices are much more nearly standardized than the services the tickets designate.

Second Class Service.—Second class service is that which provides tourists or immigrant cars in trains wholly made up of these cars, or trains partly first class and partly second. Sometimes second class tickets are sold for trains having no second class cars, but in these cases the purchasers must ride in the smokers and are denied the privilege of buying Pullman accommodations on their tickets. A tourist car is generally a sleeper but one lacking the luxurious fittings of a Pullman; it is also lighter in weight and therefore jolts much more than a Pullman. An immigrant car may be of any type the railroad has on hand but it is nearly always one that has long since become acclimated to the repair shop.

Excursion Service.—Excursion service is rendered on special cut-rate terms to specified places, and usually includes a return journey. Excursions may be arranged regularly for a whole season—as between Philadelphia and Atlantic City; or for some special event—such as the intercollegiate boat races at Poughkeepsie; or for a transcontinental journey—as from Chicago to Los Angeles.

The equipment for excursion trains ranges from solid Pullman trains drawn by the most powerful and speedy locomotives, to cars and locomotives similar to those on immigrant trains. Some excursion trains run regularly upon schedule; others are “specials” operated between regular trains, or at times, such as holidays or Sundays, when the railroad seeks extra business. Occasionally excursion tickets are sold that are good on any train, or on all but the limited extra-fare trains.

Other Parts of the Passenger Service.—Besides persons, the passenger trains carry mail, express, baggage, and perishable commodities such as milk. The mail and express functions we will discuss separately later in this chapter. The baggage facilities of American railroads are unusually convenient and liberal. Each first class ticket entitles its holder to shipment of baggage free up to 350 pounds, and the railroad assumes liability for the safe carriage of this baggage up to a valuation of \$100. Beyond this weight and this value, fees are collected. The baggage tag system relieves the American passenger of much of the annoyance in respect to baggage encountered in European travel. Personal hand luggage may be taken freely into passenger cars in any reasonable amount or variety.

"Milk trains" are anomalous and hence difficult to classify; some really belong in the freight service, others are like special trains for express, while many run upon a regular schedule and are listed on passenger time tables because they carry one or more passenger cars.

Proportional Financial Importance of the Passenger Service.—Upon most railroads the whole passenger service is subordinate to the freight service in earning power. Usually scarcely a quarter of the railroad's revenue is derived from the transportation of people. But in three areas in the United States, the passenger service shares more equally with the freight in contributing to the railroad treasury. These three are New England, the Rocky Mountains, and the Pacific Coast.

The New England case is explainable by the density of the population of that section, especially in the southern portion. The Rocky Mountain area lacks the natural resources and industries that supply large volumes of freight, hence the passenger traffic assumes a larger proportional importance. The Pacific Coast passenger business is enhanced by the multitudes of tourists who visit that region.

In all other parts of the nation the passenger business is insignificant compared with the freight, partly on account of sparseness of population, partly by reason of the great freight-yielding industries.

Selling Price of Freight and Passenger Services.—The selling price of the freight and passenger services is determined by the rates set by the railroads. No one has yet discovered a theoretical basis for establishing rates that would stand the test of experience. Therefore the railroads have to guess at the rate which will encourage the greatest traffic and obtain the most profit. If their guess is too high and results in loss of large amounts of business, the rates are reduced. The railroads revise their rates frequently to try to find the point where the greatest profitable revenue lies. But they never fully succeed because fluctuations in the national state of business prosperity or depression, and changes affecting one or only a few businesses, are constantly occurring and upset previous calculations.

Besides gauging rates by the measure of profitable revenue, railroads also consider what the receiver of the service can pay; in other words, the railroads seek to charge "what the traffic will bear." This results in high rates for goods of great value and low rates for cheap commodities, the rates bearing no relation to the differences in cost of transporting the two classes of articles. "Cost of service" sets the minimum below which the railroad cannot charge; whereas the "value of service" sets the maximum above which the shipper will not pay.

The rates set by one railroad are usually modified by what other railroads charge for the same service. Then, too, rates must conform to the regulations of state railroad commissions and the Interstate Commerce Commission. Unreasonable rates are now subject to review, rejection, or modification by these public authorities.

Freight Rates.—With these things in mind, the railroads first classify their freight, as we have shown above. Then they set a rate per 100 pounds for each class of goods. This is done under the authority of the freight traffic manager and the general freight agent by experts employed in the departments over which these officers rule. The rate thus established has two parts: one a higher rate for each class of goods offered to the railroad in less than carload lots; the other a lower rate for the same articles in carload quantities. This is a reasonable distinction because a solidly loaded car can be handled cheaply as a unit, whereas cars with mixed consignments necessitate extra expense in loading, checking, transferring, and reloading.

Passenger Fares.—Passenger fares are easier to fix than freight rates. This is due to the fact that price is a vital matter in the movement of commodities. Passenger traffic, on the other hand, is but little concerned with details of price.

A Philadelphian having business in Chicago will travel to that city whether the railroad fare is \$19 or \$25. Most passengers travel for business reasons. Of course long distance pleasure trips are more or less under the dominance of fares, but even in these cases the difference of a few cents or dollars will not deter folks from making the journey. On the other hand, a difference of one cent or less in freight rates will keep pigs or strawberries on the farm, or send them to market. Freight competition therefore is on price, whereas passenger competition is rather upon service. Hence freight rates are critically set but passenger fares more broadly established.

The officers in charge of arranging passenger fares are the passenger traffic manager and the general passenger agent. Passenger fares, like freight rates, are subject to review by public authorities.

The Mail Service.—In the United States the mail business is a government monopoly. One of the many means employed by the government in forwarding mail is the passenger service of the railroads. The railroads supply and haul cars for the mail, transfer it from station to station where that is necessary, load and unload it where the government itself does not furnish labor for these purposes, and carry it from the stations to the post-offices except in the larger cities. In addition, the railroads must furnish adequate convenient space for mail cars at terminals and have the requisite number of cars placed in the space well in advance of the time for the scheduled departure of trains. Neither can the railroads fail to have enough cars for all the mail offered, nor permit trains to depart leaving any portion of the mail behind. Finally, the railroads must attach mail cars to whatever trains the government selects, and if a single mail weighs over 50,000 pounds, a special train made up wholly of mail cars must be dispatched.

For these obligations on the part of the railroads, the government pays them about 100 million dollars a year. Formerly the payments were made on the basis of the weight of the mail together with the mileage it was carried. To determine the weight the country was divided into four zones. Every year in one of the zones the mail was carefully weighed each day for ninety days. The weight thus established became the basis for compensation for the following four years.

In 1916 this scheme was abandoned in favor of payment by space occupied by the mail. Every variety of space requirement was given a mileage rate of pay. Thus a 60-foot railway post-office car was paid at the rate of 27 cents per mile, while a 3-foot space capable of holding one closed pouch was rated at 3 cents per mile. For services other than the actual haulage of mail in cars over the railroad, such as transferring it from a station to a post-office, special remuneration was granted.

The government has sought constantly to reduce the com-

pensation of railroads for hauling mail, while the railroads in turn have always complained that their pay did not compare favorably with their expenses in fulfilling the burdensome government requirements. Since the government has embarked upon a parcels post system in direct competition with the railroad's lucrative express business, the railroads more bitterly than ever before have bewailed the unfairness of the government's demands in comparison with its stipends.

The Express Service.—Just as the railroads work for the government in carrying mail, they labor for express companies in transporting packages. The separation of this function from the railroads and its conduct by special corporations is an outgrowth of historical conditions somewhat akin to those that produced the fast freight lines and the Pullman Company.

Origin of Express Service.—In 1839 when railroads were only eleven years old, William Harnden began to carry by train small valuable parcels for clients between New York and Boston. His venture proving popular, he hired agents to aid him and extended his operations to include services between New York and Philadelphia, New York and Europe, New York and the south. A year after Harnden's start, his example was followed by Alvin Adams who competed with Harnden for the New England business. These two together with two others consolidated in 1854, adopting the trade-name of the Adams Express Company.

But this company could not keep so profitable a business to itself, especially in view of the vast expanse of American territory. Competitors arose in different parts of the country. Among them were the Wells Company (1845), the American Express Company (1850), the Wells-Fargo Company (1853)—famed for its pony riders, its bandit and Indian escapades, and its California service seventeen years before a railroad tapped that state—the United States Express Company

(1854), the Southern Express Company (1886), and the Western Express Company (1894).

In 1917 four companies—the Adams, Wells-Fargo, American, and Southern—did over 90% of the express business of the nation, covering more than 90% of the railway mileage of the country. By order of the Director General of Railroads during the World War, these four companies were welded into one, the American Railway Express Company. When the railroads and this express company were returned to their owners on March 1, 1920, the express consolidation was continued. Since then one new competitor has arisen. This one, the Southeastern Express Company, was organized in 1920 and began operations May 1, 1921. The company has the exclusive privilege of conducting the express business over the 9,359 miles of the Southern Railway system and the Mobile and Ohio Railroad.

Duties of the Railroads.—The railroads carry the express matter, set aside terminal facilities for the express company, and grant free transportation to the officers, employees, and supplies of the express company.

Obligations of the Express Companies.—The express company, in its turn, solicits business, collects and delivers the articles shipped, and assumes full responsibility for the commodities entrusted to it even when these are on railroad property. In addition, the express company cares for railroad money and packages free of charge. Revenue from the express business is divided between the company and the railroad on the basis given in the following section.

Express Companies and Railroads—Financial Arrangements.—All the money received for the express service is called "gross income." From this sum the express company deducts all of its operating expenses. The remainder is called

"income for division." Of this amount the express company takes $2\frac{1}{2}\%$, while $97\frac{1}{2}\%$ is distributed among the railroads. To determine each railroad's share the country is first divided into four sections: (1) eastern, (2) western, (3) southern, (4) mountain-Pacific. The percentage which each section yields to the gross income is then ascertained. The total amount of express income from each section having been found, the percentage of this amount contributed by each railroad in the section is next calculated.

Let us suppose, for illustration, that it is discovered that the eastern section produced in one year 45% of the gross express income. Then, of the sum for distribution among all railroads, the eastern section would be awarded 45%. If within the eastern section the Pennsylvania Railroad had earned 30% of the section's income, it would get 30% of the funds assigned to the eastern section.

But this does not end the financial arrangements. If in any one year the sum allotted to the express company as its $2\frac{1}{2}\%$ of the income for division, is a sum that exceeds $6\frac{1}{2}\%$ of the capital value of the express company, the excess is divided "50-50" between the express company and the railroads. The express company must save its share as a special fund. If in the course of years this fund shows an amount that is equal to 10% of the capital value of the express company, thereafter if yearly divisions yield to the express company sums in excess of $6\frac{1}{2}\%$ of its capital value, the division of the excess is not equal but three-fourths goes to the railroads and only one-fourth to the express company.

These complex financial settlements indicate the profitability of the express business. As a matter of record they also shed light on the opposition of the railroads, first, to the establishment of a parcels post system as a branch of the mail service, and afterwards to its enlargement.

At one time the express companies, like the railroad freight managers, classified each for itself the commodities offered

for transportation. Likewise each express company set its own rates without supervision or regulation. Since 1914 the express classification has been under the regulation of the Interstate Commerce Commission. Similarly, rates are subject to the approval of that body.

Other Express Business.—Before 1917 the express companies relied for their profits mainly upon their relationships with the railroads as forwarding agents, but conducted other profitable transactions. For example, they executed papers, wrote money orders, did an order and commission business, and made collections. They even operated personally conducted tours.

Since the formation of the American Railway Express Company, all of this accessory business has been in the hands of the American Express Company. This phase of its business has expanded to such an extent that now only a minor share of the American Express Company's income is derived from its railway connections through the American Railway Express Company.

There is nothing to prevent any of the 200 or more railroads in the United States from refusing to make a contract with an express company. The Southern Railway and the Mobile and Ohio in 1920 decided against contracting with the American Railway Express Company. Instead they formed their own company, the Southeastern. What these roads have actually done foreshadows what other railroads might do.

Express Companies No Longer Necessary.—As with the fast freight lines and the Pullman Company, so with the express companies; the conditions that produced them no longer exist. The express function could well be carried on by the railroads themselves. The separate organization of this branch of transportation is no longer an economic necessity and might well be abolished.

CHAPTER XV

THE ORGANIZATION OF EXPORT TRADE

Character of American Exports before 1914.—Prior to 1914 the principal products sold abroad from the United States were foodstuffs and raw materials, such as grain, pork and beef, raw cotton, oil, and tobacco. Our manufacturers were strained to supply the needs of our own domestic market, and engaged in foreign trade only occasionally when an unusual surplus of products forced search for wider markets. A few makers of machines which by invention and perfection had been peculiarly American, consistently pursued alien buyers. Sewing machines, harvesting appliances, cotton-gins, typewriters, and shoe machinery, originating in American factories, were sold regularly in many foreign countries.

Until about 1870, moreover, American-manufactured articles constituted less than a fifth of our total exports. Since our attention, therefore, was concentrated upon the selling abroad of foodstuffs and raw materials, the organization of the export trade was relatively simple and limited to a few types of middlemen. This organization has been sketched briefly in Chapter XI.

Between 1870 and 1914 our national manufacturing capacity gradually approximated the consuming demand, and in some instances exceeded it. Manufacturers therefore began to peer beyond the national boundaries for possible markets. As a result the statistical records of exports began to show a process of leveling between foodstuffs and raw materials on the one hand, and manufactures upon the other.

By 1913 we were exporting manufactured articles at the

rate of 2 million dollars per day, which meant that we sold a dollar's worth of machine-made goods for every two dollars' worth of foodstuffs and raw materials. Nevertheless the manufactured commodities were drawn, in the main, from a small minority of our producers; indeed, scarcely two score manufacturers engaged regularly in the export trade. To be sure, most of those that did show interest in this field were among the largest manufacturing concerns in the country. The International Harvester Company and the Singer Sewing Machine Company are cases in point.

The Change Since 1914.—The World War telescoped the evolution of years. Suddenly it caused dozens of manufacturers to become acquainted with foreign markets, while at the same time the exigencies of war compelled an unprecedented enlargement of manufacturing capacity. This expansion was not confined to the existing big concerns nor to any one industrial section, but was distributed over our whole manufacturing plant. The war, too, made our nation a creditor instead of a debtor, and it is well known that foreign trade is strangely contingent upon foreign loans.

As a result manufactured products jumped into the lead in the total of our exports. In 1919 they accounted for a full 70% of our exports. As our export trade had grown enormously in all of its branches, this outstanding position of manufactures is all the more significant.

Today, for the first time in American history, manufacturers as a group are studying the possibilities of foreign trade. Eastern concerns especially, crowded out of the domestic market by the enlargement of mid-western manufacturing capacity, and by the rise of freight rates, are eagerly scanning the world for new outlets for their products.

Export Organization—Direct and Indirect Selling.—As a nation we have not acquired the organization necessary to

care for this sudden new development in our foreign trade. The whole export organization, therefore, is in a state of change; old middlemen are seizing new functions, new middlemen are appearing in the field, and domestic manufacturing corporations are adding to their organization foreign trade departments or separate foreign trade corporations. An accurate description of the organization of the export trade, therefore, is more difficult than it was a few years ago, and may be radically modified by events from day to day. In the main, however, the means by which export trade is conducted and is likely to be conducted in the future are as follows:

There are two principal types of export organization, one called direct selling, the other indirect. Foodstuffs and raw materials are more likely to be handled indirectly, while manufactured articles pass into exports through both channels. We will describe direct selling first.

Direct Selling: The Export Department.—Although small-scale producers are not debarred from direct selling, this form of organization is most likely to be associated with large prosperous concerns which have determined to use the export market continuously.

Many business men set up an export department of their own, and have few dealings, or none, with middlemen. An export department is similar to a domestic sales department, except that its functions are more complicated by the intricacies of language, customs, varying buying power, and habits of different foreign peoples, involved questions of transportation and of tariff or import rules and regulations. Aside from these unusual features, an export manager functions like a domestic sales manager, and organizes and equips his department in essentially the same manner. This is particularly true if the export department is located at the plant.

Some export departments, however, are placed at the chief shipping port. In this case they lose the benefit of easy access

to the factory, and special supervision over packing or shipping, but they gain, by their contact with foreign buyers or agents, close association with all shipping interests including banks, and friendly union with other exporters.

The advantage of an individual export department is that such organizations place the producer in immediate relations with consumers—an invaluable asset. Of course, too, they save most of the middlemen's profits. Moreover, they energetically push the sale of the products of the company. Middlemen, particularly those handling the output of many producers, cannot devote much attention to advancing a single line.

On the other hand, separate, individual export departments are likely to be expensive additions to a producer's burdens. If they handle a few commodities they cannot afford to penetrate all possible markets, and in any case cannot without great expense develop intensively markets in a large number of different countries. These disadvantages weigh so strongly with so many producers that export departments are relatively few while middlemen flourish.

Branch Houses.—With or without export departments, some producers handle their export business through foreign branch houses. Articles that require demonstration, complicated assembly, or frequent service are apt to be sold by this method. The branch may consist of a warehouse and salesroom, a factory, or combinations of these two.

Although branch houses are effective in promoting trade and often escape payments imposed upon goods entering a country through other channels—branch factories, for instance, may perhaps avoid some or all of tariff duties—nevertheless they are more expensive in the export trade than similar branches are in the domestic trade. This is due in part to the necessity for more conspicuous and ornate structures, and in part to the stiffer competition and higher sales resistance. A branch house in a foreign country, if it engages in selling,

will antagonize the regular foreign local wholesalers and jobbers so much that they will refuse to handle the product in territories that the branch cannot reach. Since a branch house entails a large volume of trade to warrant its existence, such an organization is limited usually to the largest concerns.

Salesmen.—Salesmen may be employed by the branch house or the separate export department, but frequently salesmen alone, without any other attendant organization, constitute a producer's sole means of reaching alien consumers. But a salesman in the export trade is not the same sort of man as the ordinary domestic "drummer." He is the actual representative of his house, and as such carries more responsibility and dignity than is common within the United States. Initiative, tact, patience, and the character and bearing of a gentleman, are primary requisites of an American salesman abroad.

The maintenance of salesmen in foreign trade is generally more costly than in American domestic business. As a real representative of his house, the salesman must have first class travel accommodations and put up at hotels of recognized worth. He must not be niggardly in the entertainment of buyers. Besides these extra costs, there are to be considered also the special taxes upon salesmen assessed by various countries; samples, too, are sometimes taxed.

Combination Salesmen.—In view of these special expenses, often several producers in allied lines join together in securing a single salesman to represent them all.

Naturally this practice lessens the control of each participating producer by dividing authority. It also leaves considerable discretion to the salesman as to the amount of effort he puts into the disposal of each item in his list. On these accounts the scheme has little to recommend it except its economy. But this latter feature has a peculiar appeal to beginners in foreign trade, and to others who operate upon a small scale.

Combinations of Exporters.—Until recently exporters were prohibited from forming export combinations by fear of prosecution under the Sherman Act. But in 1918, by the Webb-Pomerene Act, Congress specifically granted permission for exporters to join together to conduct business in foreign countries. This legislation enabled Americans to do what aliens had long been accustomed to do. Since the act's passage, combinations have been formed among American exporters of electrical supplies, furniture, lumber, machine tools, paints, stoves, and many other products.

Some of the combinations are horizontal, that is, among producers of the same commodity. Others are vertical, which is to say, they are formed from makers of allied but different articles. A few have been neither horizontal nor vertical, but made up of many totally unlike producers.

The favorite method of combining is by means of a separate corporation whose stock is held by the members of the combination. The selling corporation then functions as a separate export department for all those in the combination. Many other forms of combinations exist, down to simple informal agreements to ship together through a common agency or to sell goods and products through combination salesmen.

Since the export combination is new to America it cannot be evaluated properly. It appears that more was expected of it than has actually been realized.

Indirect Selling.—Because many exporters are new to the business, and for the reason that many others have not the resources to engage in direct selling, middlemen abound in the export trade, and indeed govern the flow of the major volume of that business. Oftentimes even those exporters who have their own direct selling organization make use of the middlemen so as to reach special markets or to take care of unusual orders.

Export Commission House.—Of the middlemen, the most important in our own foreign trade is the export commission house. Each house of the kind specializes, as a rule, in some one commodity or line of articles and also devotes all its energies to one foreign sales territory.

The commission house secures orders from buyers, and handles all the technical details of packing, labeling, transportation, and entrance into the foreign country. If it does not pay cash outright with its order to the American manufacturers, it may guarantee the credit of the customer and even may make collection of the debt. For these services the house charges a commission ranging from $2\frac{1}{2}\%$ to 5%. Originally the house was a representative of the buyer and so charged him for the work done, but since the house also relieves the producer of many detailed duties as well as giving him an order, it may also levy against him.

So far as the American producer is concerned, business done with an export commission house is essentially domestic trade, for the American has no responsibilities after the commodities leave his hands or arrive at an American port.

Export Merchant.—A second type of middleman is the export merchant. He differs from the commission house in that he does not buy or sell upon orders from others but on his own account. The export merchant may control branch houses of his own, establish warehouses at home and abroad, operate steamships and stores, and in fact engage in any activity he thinks requisite to the success of his business.

The relations which the American producer maintains with the merchant are generally similar to those with any domestic wholesaler or jobber. Usually the merchant contracts to take a stated quantity of the producer's articles, in return for which he is given an exclusive agency in the country in which he operates. To the American, transactions with an export merchant are virtually domestic business.

Manufacturers' Agent.—In the principal American ports there is an intermediary who sometimes acts as a broker, city-salesman, or agent for a number of different manufacturers. Generally this agent confines his attention to one allied line of products but he may take on a variety of different commodities.

The agent's function is constant visitation of foreign commission houses seeking their orders, and keeping the firms he represents before their attention. He may also cultivate foreign customers directly. From these fairly simple duties, the various agents according to their abilities or opportunities acquire others more responsible and detailed. Some advance so far as to have complete charge of their manufacturers' foreign business, including direction of the details of shipping and financing.

Naturally the success of this method of doing foreign business depends entirely upon the integrity and ability of the agent.

The Forwarding Company.—Some producers who are located at a distance from a port find it convenient to employ a middleman known as a forwarder to take care of the details of foreign shipments. The producer himself through his own organization solicits the orders, packs the goods, and makes out the invoice. He then turns to a forwarding company for assistance.

The latter provides transportation to a port, secures all the necessary documents, arranges for cargo space, wharfage and loading, and upon arrival in the foreign country sees that the articles reach the buyer. The forwarding company usually makes collection from the buyer when the time for payment arrives.

This middleman relieves the producer of all the details attached to foreign trade except the gaining of orders and granting of credit. The forwarding company fills the field wherein the most minute expert knowledge is required and

where constant alertness is necessary to keep up to date. By using this middleman the producer escapes much of the liability to error and annoyance incident to export trade and saves the installation of an expert staff to do what is requisite for moving goods from the point of origin to the points of consumption.

Shipping Terms.—One vital element in the export business that is often overlooked or minimized by beginners in this country, is that of definiteness in quoting shipping terms. The foreign buyer wants to know what goods are going to cost him on his own premises. This means that the prices given to him must be on the specific understanding of what they include. In domestic trade, where transportation is regular, and sure, and where its costs are generally known, prices are generally based on the cost of the goods at the factory plus delivery to the transportation company. This we abbreviate to f.o.b., which means “free on board.” Our domestic prices are therefore usually understood, if no other arrangement is made, to be f.o.b. prices.

But export commodities have to bear many additional charges over and above the railroad freight bill. There are dock and harbor duties, lighterage, ordinary insurance, special marine insurance, tariff dues, and perhaps other charges, all of which add appreciably to the cost of goods.

To distinguish how much of this expense is borne by the producer, price quotations should have significant initials after them. Thus “f.o.b. port” means that the producer’s price includes transportation to the city of departure. The term “f.o.b. vessel” indicates that the dock, harbor and lighterage charges are included in the price. Sometimes the term “f.a.s.”—freight alongside vessel—is employed to signify this kind of sale. The latter term, however, is not exactly synonymous with the former, for it includes the cost of special hoisting if large bulky or heavy packages are to be lifted aboard. The

term "c.i.f." stands for the fact that the producer's price covers all costs, insurance and freight. If the letter "e." is added this means that the exchange will be paid by the exporter. If "c.i." are added, the shipper shows his assumption of the burden of collection and the interest thereon.

Foreign buyers, unlike the ordinary domestic purchaser, want prices quoted on the c.i.f. basis. Neglect to do so often injures our export business.

Credit.—Another respect in which the export trade differs from the domestic is the necessity for longer credits, and more lenience in the extension of time beyond that set. The mere distance separating seller and buyer, delaying receipt of goods and communication concerning them, stands as a reason for giving foreign buyers a longer time to pay their bills than is customary among domestic purchasers. In addition, many of the aliens who deal with us live in countries where agriculture is the mainstay. Farmers cannot pay their bills until the harvest. The alien merchant who sells to farmers cannot pay his bill to us until his farmer customers settle their debts. This factor tends to make the export trade upon a longer time base for credit than the domestic. Finally, even with long credits, it is often wise to make extensions more readily than with our own countrymen, because when a foreign bill is due the temporary state of foreign exchange may be against the interest of the alien debtor. Shortly afterwards he may find that he is able to fulfil his obligation without so much penalty to himself.

Until recently our banking law was not conducive to rendering such long credits easy, because our banking laws did not permit commercial banks to accept or discount long-time foreign bills or drafts. The Edge Act, however, provides that banking associations may be formed to handle foreign commercial paper without the restrictions laid upon domestic banks. This ought to facilitate our export trade.

Credit Ratings.—If the American deals entirely through middlemen, the export credit problem generally resolves itself into the simple ascertainment of the credit rating of the middlemen. This fact is easily learned through the regular domestic channels for such information. Banks, trade bureaus, export trade publications, credit protection societies, and mercantile agencies such as Dun's or Bradstreet's, will furnish all the advice that is required.

To ascertain the responsibility of foreign buyers for the goods they order is no more difficult than to find out the credit rating of an American purchaser. Banks in the countries where the prospective customer is engaged in business will give Americans an adequate statement of the customer's financial standing. American chambers of commerce in foreign countries likewise are able to render valuable advisory assistance when questions of debts arise. Salesmen for American firms traveling in foreign territory, like domestic salesmen, supply their houses with first-hand fact and opinion concerning purchasers' ability to pay. Finally our own mercantile agencies having foreign branches, and foreign mercantile agencies, are ready to serve the American exporter. Through all these sources the man who has charge of credit relations for an exporter may make his decisions upon the basis of known facts.

The British and Germans, who for a longer time have dealt more intensively than Americans with the intricacies of foreign trade, have developed official and private insurance schemes for handling foreign credits. Banks act as information bureaus. Upon their favorable recommendation the insurance organization advances immediately to the exporter from three-fourths to four-fifths of the amount of his invoice. The insurance company then attends to the whole matter of collection from the foreigner, and turns over to the exporter the balance of the sums due him, minus the insurance charges. This plan is used particularly with purchasers in countries new to foreign trade such as Czecho-Slovakia and Jugo-Slavia.

Government Aids to Foreign Trade in the United States.—Although as yet we have no official insurance of foreign credits, nevertheless our government in numerous other ways holds out a helping hand to our exporters.

The Bureau of Foreign and Domestic Commerce was created with the definite function of assisting in the extension of American trade. It does so, mainly, by supplying needful information and statistics to exporters. Any American producer may make written inquiry of the Bureau concerning any specific trade problem that arises, and the Bureau will furnish whatever information it has available.

More general matters are brought to the attention of those interested by means of the printed material published by the Bureau. Among the most valuable of these publications is the weekly "Commerce Report" which regularly contains articles and notes from the Bureau's representatives in foreign lands, as well as vital trade statistics and reprints of valuable articles that have appeared in foreign journals. Besides the "Commerce Report," the Bureau issues from time to time special bulletins, some dealing with the world market for a particular commodity such as cotton, some giving an analysis of all the trade opportunities and economic conditions within a specific country or trade territory, while still others are statistical in nature.

In addition to these services, the Bureau also gives information about tariffs, rules for commercial salesmen in foreign countries, consular regulations, foreign taxes upon trade, and trade-mark and patent legal requirements. Lists of foreign buyers or agents and similar lists of Americans interested in foreign trade are kept on file and up to date.

The State Department through the consular service and trade advisors also is well equipped to aid Americans.

Commercial attachés representing foreign countries in the United States are ready to supply valuable information about their own countries to American inquirers.

Private Agencies for the Furtherance of Foreign Trade.

—But the government is not alone in its guidance to American traders. There are numerous private agencies that grant aid and counsel to business adventurers in foreign places.

Among them should be mentioned the Philadelphia Commercial Museum. This institution not only contains an unusually complete array of exhibits of the world's commercial products, but maintains a translation bureau for the service of its clients, publishes trade periodicals, furnishes trade lists, and receives and distributes inquiries from foreigners concerning American products.

Other organizations rendering assistance to those interested in foreign trade are the Pan American Union—a bureau supported at Washington by the Latin-American Republics—the United States Chamber of Commerce, the National Foreign Trade Council of New York City, and the American Manufacturers' Export Association, also of New York.

Chambers of commerce in various cities have added departments to their organization whose purpose is the furtherance of foreign trade. Among such departments are those connected with the chambers of commerce of Boston, New York, Atlanta, Detroit, Cleveland, New Orleans, Seattle, Portland (Oregon), San Francisco, Los Angeles, and San Diego.

Finally, there are a dozen or more periodicals devoted exclusively to foreign subjects, some touching upon business alone, such as Dun's "International Review," while others like "The Americas" are more general in the character of articles they print. A few periodicals not limited to the foreign field nevertheless frequently publish business articles dealing with foreign trade. The *World's Work*, *System*, *Printers' Ink*, and *Administration*, are journals that exemplify this practice.

Conclusion.—Despite our long and honorable record as an exporter of farm products, and of raw materials originating

in mines or forests, it is fair to say that the United States is just beginning to realize the importance of foreign trade as an economic asset. Consequently we have only made a start toward developing organization to furnish trade channels and to facilitate financial and informational agencies. The future expansion of export activity that seems sure to come must be accompanied by an enlargement and modification of existing organizations in this business field.

CHAPTER XVI

THE ORGANIZATION OF LABOR

Organized Labor Representative of All Labor.—Labor is one of the essential factors in our economic order. Without labor our present productive enterprises could not function. Since the labor group is the most numerous in industrial society, it comprises the largest single element among consumers. In 1920, out of our total population of 105 millions, there were 41 million wage-earners. Hence, whatever concerns labor is vital to the economic life of the country.

In order to show where and how labor fits into our national industrial mechanism, we have chosen organized labor as representative of all labor. Inasmuch as unions number only 10% of all the persons gainfully employed in the United States, it may seem unwarranted to let union labor stand for all labor. But such a minimizing of organized labor is due to hasty assumptions concerning the significance of its scant membership compared to the total number of all workers.

Although unions can count scarcely 10% of all wage-earners, this relatively small membership is recruited from the occupations that are most intimately connected with the most significant industrial matters. To illuminate this point a broad analysis of the statistics of wage-earners is necessary.

The Three Groups of Wage-Earners.—The 41 million wage-earners in the United States in 1920 were found in three great groups. The first included such occupations as domestic service, trade, clerical, professional, and public services. The second was made up of all those individuals employed in agri-

culture, forestry, and animal industries. The third consisted of manufacturing and mechanical pursuits, and the employees connected with transportation agencies. Each of these three groups contained approximately the same number of persons.

The first group was predominantly feminine in composition and it is a notorious fact that women do not stay in service long enough individually to make their organized power effective. As a result, they are generally in jobs that may be classified as unskilled or semi-skilled, and are subject to low pay. Since such places are easily filled, labor turnover is high, a feature which is intensified by the large number of women who intentionally enter paid employment for a limited time.

As a consequence of the lack of permanence in a job as well as the low degree of skill involved in the work itself, this group of wage-earners is largely outside the ranks of organized labor. The hours, wages, and working conditions are on the one hand either set by custom or by the arbitrary will of the employer, or on the other hand are correlated with those of organized skilled labor in connection with which the first group is employed in clerical or service positions.

The second group, comprising the workers on farms and in forests, is also unstable because some of the members soon pass into the employing class, while others seek occupations listed in the other two groups. The relatively small number of workers who habitually migrate from farms to forests, or forests to farms, are too individual in their problems and place in the economic organization of the nation to warrant their selection as typical of the workers of the country. Although these migratory workers are enemies to their own well-being and a menace to organized society, their problems are social rather than economic notwithstanding the industrial conditions on which they rest.

It is only in the third group, comprising the labor hired by factories, mines, and railroads, that we discover large numbers of men who devote their lives to learning and practicing trades.

These trades may involve a high degree of skill such as those of the locomotive engineers, or glass-blowers, or may require almost no special training like those of the hod-carrier, street-cleaner, or steel mill labor gang. But, on the whole, the characteristics, wages, hours, and working conditions of the men in this group stand in people's minds as symbolic of labor in general. When any of us think of Labor (with a capital), we generally have in view the workers in this third class.

Relation of Third Group to Unionism.—It is this group, it happens, that contains the most and strongest unions. In truth the total of union men in the country is equal to about a third of the entire membership of this last group. Consequently, although it is true that scarcely 10% of all wage-earners are unionist, about a third of all the men in group three may be classified as organized labor. This organized minority struggles for its own selfish ends but nevertheless is the cause for passing the benefits of the struggle to the majority when the ends are attained.

For example, first the ten-hour and then the eight-hour day were contended for by craft unions for their own limited membership, but once these hours were recognized as the standard working-day, the unorganized workers as well as the unionists secured the boon. Therefore this chapter dealing with labor as part of the national economic organization, will use the story of organized labor as its kernel.

The Requisites for Labor Organization.—The history of labor shows that in order to have organized labor prominent four conditions of industry must be present: (1) The worker must be separated from the tools or means of production. (2) Laborers in the same trade must be able to come into close contact with each other. (3) Opportunities for especially gifted workmen to rise above their class must be shut off, with the result that these men denied individual advancement

become leaders in efforts for the improvement of their class.

(4) The conditions under which work is done must be so burdensome or oppressive that the men engaged in the work have a common grievance.

There was no movement toward organized labor in Europe until the workers were confronted with these four conditions; likewise, in the United States, the appearance of organized labor coincided with the fulfilment of these requisites. The movement in this country was a half century later than in Europe because our economic order was that much slower in reaching the stage where these four fundamentals became prominent. A closer survey of our own labor history will bear witness to the truth of these assertions.

Colonial Period: Workers Not Separated from Means of Production.—There was almost no attempt to organize labor before the American Revolutionary War. In part this was due to the fact that industry was not organized for distant unknown consumers. Our industry was on the household basis, each home producing what it needed for its own consumption, or else denying itself the commodities it could not make. Each householder owned his tools and the means of production and gained the whole produce of his operations.

Lack of Artisan Contact.—In the second place, there was no artisan class collected in any one locality nor was there any considerable group of tradesmen practicing the same calling. This follows as a corollary to the household organization of industry. There were a few itinerant craftsmen such as weavers, shoemakers, or tinkers, but these men always traveled and worked as individuals. Nearly every village also contained a flour mill, sawmill and fulling establishment, and some had tanneries as well, but none of these enterprises gave employment to large aggregations of men; indeed most of them were one-man establishments.

The sole outstanding example of grouping of labor was found in the shipyards of New England, and it is significant that among them we find evidences of a gild organization otherwise unknown in America. However, the shipyard workers lacked even the rudiments of a modern union because the fact of their grouping was the only one of the four essentials of unionism that they experienced.

The lack of contact of craftsman with craftsman generally in America was emphasized by the scattering of a small population over a large territory. For instance, there were only 3 million people in all the thirteen colonies at the time of the Revolution, and these were sprinkled all the way from Maine to Georgia. In 1790 there were only six cities and but 3% of the total population of the country lived under urban conditions.

Plenty of Opportunity.—Thirdly, with a continent for a backyard, the Atlantic colonies offered every white man the chance to become an individual landowner. This fact, of course, constituted a labor problem of peculiar nature, for men so consistently availed themselves of their opportunities that there was a chronic dearth of labor. With wages high and land cheap, no one needed to remain as a wage-earner.

In the south, where agriculture was organized on the basis of plantations instead of individual small farms, the only way that labor could be induced to stay on the place was by means of indenture. But the supply of indentured servants was so limited—being confined to immigrants who used this means of gaining passage to America or non-English speaking aliens who wanted a period to adjust themselves to a new language and new customs—and so many servants ran away that the southerners turned toward African slavery for relief. This set up in a new country a system of labor long before abandoned in Europe. In no other part of America was slavery profitable, for no other section had a large money-crop

capable of unskilled labor cultivation and the long winters of the central and northern colonies made prohibitive the cost of maintaining slaves in idleness.

White labor everywhere in America had an opportunity to rise, hence there was no permanent labor class and nothing conducive to the creation of labor leaders. From the first settlements in 1607 to the war in 1776, none of the conditions requisite to the organization of labor unions were present in America.

Revolution to Civil War Period: Beginning of Separation of Workers from Tools.—Following the Revolution, changes in industry began to pave the way for labor organization. Slater inaugurated cotton spinning by machinery in 1790, and power weaving was started in Waltham, Massachusetts, in 1814. These events mark the inception of the factory system in America. As the principle of machine production spread from industry to industry, homes lost to factories much of the long-established household manufactures. The result was the introduction of capitalism into industry and the separation of the worker from the ownership of the tools and means of production.

Artisan Contact.—The common working place furnished contact of one worker with another. Soon the wage-earners felt they had grievances in the length of the working day and the low pay they received, together with the growing competition for jobs occasioned by the breakdown of the apprentice system and the employment of "green" hands. From time to time, therefore, the men or women of particular factories joined together in strikes against their employers.

Opportunity Retained.—But there were so many opportunities for advancement in the vigorous growing country that working forces were constantly changing in their person-

nel, with the result that the organizations formed to fight a particular issue seldom outlived the settlement of that issue whether or not the workers secured what they wanted.

Situation in the Hand Trades.—But even the trades, such as shoe manufacture, in which machinery was slow to find place witnessed a growing power among middlemen, especially wholesalers, who turned the old-fashioned, small-scale production for immediate sale to a known consumer, into large-scale manufacture for delayed sale to a consumer distant from and unknown to the producer. Consequently, shops appeared even in hand trades.

In these shops the worker was separated from control of raw materials and sale of finished goods and sometimes had his tools supplied by the employer. Master workmen in various towns were brought into competition with each other. They endeavored to cut their costs of production by quantitative output and reducing wages to workmen. Reduction of wages was accomplished by subdivision of the labor and the hiring of an unaccustomed number of apprentices or "green hands" who could easily master the much simplified new tasks.

This procedure on the part of the shop employers constituted a grievance to the middle-aged craftsmen who had spent their lives in acquiring the technique of a trade. In the cities where many shoemakers, printers, carpenters, and the like were undergoing similar hardships the workers united by crafts to fight by means of the strike or boycott the new methods of employers. These organizations, too, were temporary, seldom arriving at the second birthday.

The same forces that operated against permanent organization of workers in factories dominated by machinery prevented also the craftsmen in hand trades—even where they came together in city shops—from maintaining group organization.

Labor Organization 1840-60.—These conditions applied most forcibly to the decades of the twenties and thirties. In the succeeding twenty years before the Civil War, the movement toward the factory régime was quickened, broadened, and intensified. A factory wage-earning class began to emerge and opportunities for advancement became more curtailed. These factors gave greater power to labor organizations and granted them more endurance than they had known in the earlier years. A few trades expanded beyond local organization and took on national characteristics.

But most of the organization was in the form of general labor unions rather than trade unions, or a federation between cities of federations existing within the cities. Lacking the unity of a trade union these associations also failed to attain the strength of trade unions. They were likely to be diverted from economic programs of self-betterment toward general social reforms gained by political means. Furthermore, they had not learned the lesson that security may be obtained by high dues and benefit schemes. Accordingly most of the pre-Civil War unions lasted only as long as a period of industrial prosperity or during spasms of political success. Each wave of business depression or each political setback disrupted or destroyed the existing unions.

Labor Organization Since the Civil War: The New Era.—Between the time of the Civil War and the World War, industrial United States was transformed. It is sufficient here to suggest the expansion of communication and transportation; the removal of manufacture from the home to the factory; the development of crude machinery to complex perfected automaticity; the increase in the size of the units of business, together with the introduction of the corporation; and eventually the amalgamation or integration of separate corporations into one gigantic whole within an industry; the rapid settlement of our continent, the flood of inventions; and

the discovery, appropriation, or exploitation of great natural resources—all these established a new era in American history.

Naturally labor was deeply involved in an industrial reorganization so complete. Labor was forced to adjust itself to the new conditions and to work out an organization adapted to the new order of industry.

Growth of Capitalism.—Among the outstanding features of the post-Civil War industrial régime is the growth and power of capitalism. The building of modern factories and their equipment with perfected machinery requires a heavy investment. The larger units in industry are beyond the powers of individual financing and so make use of the corporate form to distribute the investment among large numbers of individuals in the forms of stocks or bonds. The pre-Civil War shoemaker owning his own little shop together with its equipment of benches, lasts, tools, and thread, has given way to the great United Shoe Machinery Company owning nearly all the shoe machines in operation in the country, together with great manufacturers such as the George E. Keith Company of Brockton, owning the buildings, raw materials, and power equipment with which shoes are now made. The shoemaker today is an employee, owning nothing but his own skill and time.

Separation of Workers from Tools.—In short, our workers not only in shoe factories but throughout our industrial order, have been separated from the tools or means of production. Ownership is vested in the widespread holders of stocks and bonds, who are interested in industrial properties as an investment rather than as a means of production for their own satisfaction or the personal sale of products to others.

Such a change was certain to be reflected in the social position and the ideas of workers. It has placed them in a wage-earning class, and removed from them all interest and

responsibility for the conduct of a business, leaving as their chief interest the making of the best bargain for the sale of their skill and time, to be used under conditions most favorable to themselves.

Contact Supplied by Modern Conditions.—The second effect of modern industrialism is to gather together in one place great groups of workers doing similar or related work. Whereas once nearly every worker was a soloist, now he is a member of a large chorus. This mode of work gives opportunity for much talk between workers of like kind. Out of the conversation, ideas for the betterment or aggrandizement of labor are germinated, awaiting an occasion and a leader to be put into action. The character, policies, and practices of the employer determine whether the workers' contact with one another conceives ideas beneficial to the employer or breeds ominous reprisals for real or fancied grievances.

Grievances.—The rapid revolution of industry has proven a prolific mother of contention. Stiff-necked employers are opposed by rough-necked employees. Arbitrary rule is met by violent irruption of labor discontent. The speed of modern industry has made unduly long hours not only a burden and a menace to the individual worker, but a threat to the future of our race through the exhausted vitality of our working forces. Rising standards of living, together with the increasing cost of advancing those standards, make the question of wages a perennial grievance with workers. Knowledge that a lifetime must be spent at work as well as the recognition that ventilation, sanitation, proper lighting, and the like affect both life and earning power, make improper working conditions a grievance among the workers in plants where the management overlooks or ignores these elementary matters.

So the great changes in industry have carried along with them their own ills which if not cured or at least attacked by

the responsible employer are seized upon by labor as grievances and made the issues of organized campaigns of aggression.

Finally, to some workers the whole wage system seems unfair or unjust. A few advocate its overthrow either by peaceful evolution or violent disruption. Others seek for their fellows a greater share in the responsibilities and rewards of the existing industrial order.

No change or movement can be made without friction. It is not surprising, therefore, that the enormous changes in industry since the Civil War should have been accompanied by the friction of labor grievances, especially since the labor has been most vitally affected by the changes.

Constriction of Opportunity.—One of the most unfortunate results of the events since the Civil War has been the constriction of opportunity. The larger scale upon which industry operates has, it is true, held out higher rewards to the few most capable men, but the many opportunities once open to mediocre and low-grade individuals have been curtailed. The exhaustion of the large areas of free land, also has closed that door which either actually or potentially led to freedom for many a worker in past decades. Workers are beginning to feel that they are thrown into a class out of which they cannot rise except by extraordinary talents or unusually good fortune.

This situation tends to eliminate advancement by individual endeavor, and instead substitutes mass action seeking the elevation of the whole class. Men who formerly would have passed upward to higher levels are now retained in the class and become its leaders. Yet America does still offer opportunity to unusual men, and even now we do not have a permanent hereditary labor class. Consequently, the conditions are not yet ripe for the creation of the highest order of labor leaders, despite individual instances; and class consciousness, an essential to militant labor organization, is largely absent.

It is significant of a tendency, however, that opportunity for advancement, once universal and easy of access, is now restricted to the most energetic seekers.

Because the industrial changes since the Civil War have produced the conditions just sketched—obviously most favorable to labor organization—it is not astonishing that the greatest flowering of unionism in America has occurred within the memory of living men. The organizations have taken three forms: (1) labor unions, (2) trade or craft unions, and (3) industrial unions.

The Labor Union.—A labor union is distinguished from a trade union by the qualifications for membership; the former admits any worker irrespective of craft, whereas the latter confines itself entirely to men and women practicing one distinct calling. The first really great union in the United States was a labor union called the Noble Order of the Knights of Labor, founded in 1869 by a Philadelphia tailor named Uriah Stevens. Sex, creed, color, and trade distinctions were swept aside by the Knights. The only workers or interested individuals who were debarred from membership were makers and dealers in alcoholic drinks, professional gamblers, stock-brokers, bankers, and lawyers.

The Knights of Labor.—The smallest unit in the organization of the Knights was called a Local Assembly. Usually the locals were made up of persons from many different trades and social positions, although a few in places where particular trades predominated were purely craft groups. Similarly a few locals contained only women members. Above the locals was a representative District Assembly holding authority over all the locals in a given region. The national body, representative in character, was called the General Assembly. Authority was highly centralized among the principal officers of the order chosen by the General Assembly.

Started in 1869 with one small local, the Knights of Labor by 1886 was the largest, most powerful labor organization known up to that time. At the height of its influence, it claimed upward of a million members.

Since its body had no unity of trade or social class, the aims and methods of the Knights were largely social rather than directly economic. For example, its chief aim was the furtherance of co-operative enterprises; and its favorite method political activity. Through the pressure brought by the locals that were distinctly craft organizations, the order was forced into economic demands in regard to wages, hours, and working conditions, and compelled to use strikes to accomplish these ends.

Decline of the Knights.—The Knights of Labor skyrocketed into fame, burst into a blaze of glory by successful railroad strikes in the seventies and eighties, and then vanished. The order exemplified the weakness of a labor union, namely, its lack of unity. The craft locals were continually at odds with the mixed locals and district or general assemblies. The craftsmen forced the order into several disastrous strikes in the late eighties, and then deserted the Knights for the rising American Federation of Labor. The Knights, too, were disrupted by indulgence in politics in which the order was not supported by the membership. The bad judgment of the leaders of the Knights, in whom was vested an unusual degree of power, brought discredit also to the whole union. Finally a fight for supremacy with a vigorous young craft union known as the American Federation of Labor brought defeat and ruin to the Knights.

The Trade Union.—In 1881 members of some of the craft locals of the Knights, disgruntled by the manner in which District and General Assemblies ignored craft interests, issued a call for the formation of a new union in which the trade should

be paramount. The new union called itself the Federation of Trades and Labor Unions of United States and Canada, and for five years struggled to effect economic betterment by means of legislative action.

The American Federation of Labor.—In 1886 a reorganization took place, and the name was changed to The American Federation of Labor. The aims of this Federation have been consistently economic, and comprise a shorter working day, a higher wage, better working conditions and union recognition. The principal means of accomplishing these ends has always been the strike. The Federation has always zealously kept out of politics; that is, has opposed separate labor political parties. But it has encouraged non-partisan political activity. It urges its members to vote for its friends and against its enemies regardless of the party label attached to those friends or enemies.

Membership in a trade union has been limited to men and women actually earning their livings in that trade. A group of seven or more craftsmen may form themselves into a "local." The "locals" send representatives to the "national" of their own trade. Each trade union "national" is autonomous. For united action for common purpose, the various trade-union "locals" of a city are federated into city central unions, and, similarly, within states where there are state federations. The Federation of the Nationals comprises the American Federation of Labor, a representative body. The various federations—city, state, and A. F. of L.—have advisory and policy-forming powers only, for within its own sphere each national is supreme.

The great strength of these trade unions is their unity. By it, in their infancy, they overthrew the disunited Knights of Labor. Unity has been the secret of their growth and their dominant position and influence in the field of labor today.

Industrial Unions.—But the union limited strictly to craft membership is beginning to get out of step with marching industrial progress. As we have shown in other chapters, craftsmanship depends upon skilled labor, but industry for 125 years has endeavored to release itself from dependence upon skill. Subdivision of labor, improved machinery, and automatic machinery reduce skilled labor first to the semi-skilled stage and eventually to the unskilled. Moreover, in so far as skilled labor is retained, its craft or trade jurisdiction is broken down by the host of new callings coincident with new industries.

Industry itself is no longer disunited in separate units but organized into large-scale, compact groups either vertically like the United States Steel Corporation or horizontally like the American Tobacco Company. The reduction of skill minimizes the power of trade unions; the overlapping of crafts produces internal union friction by conflicts over jurisdiction; and a trade organization cannot cope adequately with a large-scale business integration or amalgamation.

Out of these conditions is born the industrial union. It enrolls all the workers in a given industry regardless of craft. It differs from the labor union such as the Knights of Labor in that it is confined to one industry.

Industrial Unions: Social and Political Weapons.—Since an industrial union is a mass organization, it must have mass aims and use mass methods. In so far as it deals with economic issues, these must be general rather than particular. For example, a carpenters' union may demand an increase of pay for carpenters from five to six dollars a day. An industrial union cannot well ask for wage advances for any one group of workers, but must seek to raise wages for the whole employee force, say 10% or 20%. Inasmuch as a general increase of this sort is harder to win than one confined to one craft, industrial unions are likely to emphasize social or political changes

favorable to labor rather than specializing upon economic issues as has been the custom of trade unions.

Furthermore, with the monopoly power of skilled labor reduced, and with an organization largely devoid of the forms necessary to use skilled labor's power, an industrial union is more likely to resort to force than is a trade union. Sabotage or terrorism on the job and violence in connection with strikes are apt to accompany a rise of industrial unionism.

Nevertheless it appears that the tendency is toward this form of labor organization and away from the older forms. The formation of company unions, and the introduction of various kinds of "industrial democracy" may without intention on the part of the promoters lead toward industrial unionism.

CHAPTER XVII

THE WEAPONS OF ORGANIZED LABOR

Weapons of Organized Labor.—Regardless of the form of the labor organization, whether it be a labor union, craft union, or industrial union, the group has always had its choice of four weapons to accomplish its aims. These four are: (1) politics, (2) legislation, (3) social reform, and (4) economic pressure exerted by the strike, boycott, blacklist, and union label.

As we have shown above, the choice of weapons is partly determined by the form of the organization; for labor or industrial unions, by the nature of their membership qualifications, incline toward the first three weapons, while crafts unions favor economic pressure.

But all of the varieties of unions are swayed in their selection of weapons by the state of business. In times of depression all labor organizations tend to gain their ends by means of politics, legislation, or social reform. In such periods their economic power is weak but as voters their position is unchanged. Social reform appears both attractive and reasonable at a time when existing social order seems to be producing want and misery.

On the other hand, when the country is prosperous and business has more jobs to offer than there are men to fill them, economic pressure upon individual employers or upon a whole industry is more effective in quickly producing results.

Therefore, if one knows what the state of business is at any given period one can be reasonably sure what sort of program organized labor is most diligently advocating; or by

watching the movements into which labor is throwing its weight, one may easily guess the prevalent state of business. With these generalizations in mind regarding the use of the four weapons, it is worth while to analyze a little more closely the weapons themselves.

Labor in Politics.—In most European industrial countries organized labor has deliberately cultivated two types of aggression; one economic, the other political. Except in Great Britain the political sector of organized labor's front has been held by the Socialist party. The British and American labor organizations have resisted the efforts of the socialists to swing the various unions into the political battle under the red banner.

In America this refusal to join the unions with the socialists is probably due to the early extension of the franchise to all male citizens, making unnecessary a labor political movement to gain this boon. Secondly, American labor as a whole has not been dissatisfied with the wage *system*, however much the workingman may have tried to change the *rate* of wages. Hence American labor has used its voting power to improve the conditions under which work is done but has steadfastly denied the need for overturning the industrial order to accomplish labor's desires. The labor movement, therefore, in our country has always been distinct from the Socialist party.

Political Weapon Confined to Early Period of Unionism.—In so far as American labor has been attracted into politics as a separate labor party, it has done so without affiliation with any radical or revolutionary organization. The examples of direct political action by labor in the United States all occurred before the formation of the American Federation of Labor. The reason the latter has opposed the use of the political weapon is the lack of success that attended the earlier efforts of labor in politics. Although the labor political parties, especially

in Philadelphia and New York, met with occasional temporary success, in the long run these projects all failed.

Failure of Labor Political Parties: 1. Dissension.—The causes for the failure of such parties are not hard to ascertain. In the first place the movements were always disrupted by dissension, partly legitimate, partly illegitimate. All sorts of malcontents have flocked to labor parties, each with a special program for reform. It has been hard to get all these elements united to push through any one group of measures, and even when they have acted in concert for a time, sooner or later individuals or several of them together have become disgusted with the movement, and either withdrawn their support or broken up the party by useless bickering. We call this legitimate dissension because it is inherent in the composition of a labor party.

On the contrary, much trouble has arisen within labor ranks because the established parties have sent agents into the labor camp with the express purpose of fanning the inherent differences of opinion into open flame of rebellion against labor party tactics. The older parties have done this sort of thing to remove the menace of political extinction.

2. Slander.—Secondly, labor in politics has been subjected to an undue amount of slander. The least of the calumnies have been the charges of anti-Americanism, anti-churchism, or adherence to free love. The private opinions of a few of the laborites have been branded as the public tenets of the party itself. Belittling epithets have also been hurled at the worker-politicians. A vigorous campaign of such slander has driven enough weak brethren from the labor army to render its effort innocuous.

3. Inexperience.—The inexperience of the labor party leaders has also been a potent influence in the failure of their

political party effort. They have shown their lack of ripened wisdom by their selection of policies, candidates, and tactics. Fighting against veterans in the established parties, the green labor politicians have stood little chance of enduring success.

4. Theft of Program by Older Parties.—Whenever the program of a labor political party appeared to be meeting popular support, one or the other of the older parties has seized it and made it a pet project of its own, thus stealing the labor party's "thunder." With its platform gone, the labor party has had nothing on which to stand and so has disappeared from view.

5. Change in Business Conditions.—Finally, workers have been interested in politics as a weapon only so long as business conditions were so bad that the economic weapon was useless. With the return of prosperity politics have been forgotten, and economic pressure restored as means of accomplishing labor desires.

The Policy of the A. F. of L.—Experience had taught these lessons regarding labor in politics before the American Federation of Labor assumed leadership of the labor movement. Consequently the A. F. of L. has consistently avoided the mistake of direct battling at the polls. But it has watched professional politicians in their pledges and performances, and regardless of party names has tried to support those politicians that have favored the measures for which labor worked. Conversely, the labor leaders have preached to their followers the necessity of withholding votes from men who by promises or acts prove themselves hostile to labor's aims.

Labor Legislation.—As a result of this practice labor has been extraordinarily successful in influencing legislation. A description of all the legislation sponsored or supported by

labor obviously is impossible in this chapter. It will be sufficient to suggest the different forms this legislation has taken by mentioning the laws relating to labor as creditor or debtor; the free school and later free textbook laws; the immigration laws; workmen's compensation and employer liability acts; laws providing minimum wages and maximum hours; laws regulating the labor of women and children; enactments safeguarding free labor from the competition of convict labor; and inspection laws with reference to fire hazards, sanitation, ventilation and the like.

Legislation a Secondary Weapon.—Despite the excellent results obtained by using the legislative weapon, organized labor does not look upon it as a main reliance. In fact much of the enthusiasm once directed toward labor legislation is now turned toward other weapons. The opposition is partly pragmatic, partly strategic.

From experience labor legislation does not seem worth what it costs in time and effort to secure it. To get a law passed is a slow, tortuous, difficult task. The measure must first secure the approval of the annual convention of the American Federation. It then passes through the state federation. Proposal by a friend in the legislature is the next step. In each house it must be fought for in committee and on the floor and finally it must secure a governor's consent. Even then it may be emasculated by insufficient appropriation to carry it out, or by the appointment of improper administrators. Finally it must run the gauntlet of the courts. After a law has survived all these risks it begins immediately to get out of date, and revision is as difficult as the original passage. For all these reasons, based upon experience, labor leaders would prefer almost any other way of securing their projects to submitting them to a legislature or to Congress.

Strategic considerations also enhance labor's reluctance to win its fights by legislation. The unions alone are seldom

responsible for the passage of a law and hence can base little claim for union loyalty upon legislative achievements. Moreover, union members cannot be persuaded to pay dues to an organization to get for them what a legislature gives apparently for nothing. Hence legislative success may mean union failure. Therefore union leaders hesitate to put before legislatures measures that may be won by any other means for which the union can claim more individual credit. Legislation therefore is a last-ditch weapon.

Social Reform.—In a period of business depression when economic pressure is ineffective and when politicians resist the introduction of labor legislation, organized labor is likely to drift toward using social reform to elevate the mass of labor. The more rigorous the depression, the more revolutionary are the reform measures advocated. The existence of hard times is taken as proof that the existing social structure is inadequate, and any scheme that offers jobs or release from poverty is hailed as the means of deliverance.

The most persistent reform chosen to raise labor up from the mire of unemployment and the inequalities of the wage system is co-operation. That successful co-operation presupposes homogeneity of population, the willingness to take pains to make small savings, the necessity for efficient, honest management, and some adequate method for providing capital—all these are most frequently overlooked. The idea and the name become fetishes which are supported with almost religious zeal.

Likewise the community idea is seized by the labor group. The communities hoped for range from those exemplifying communism to those that are merely the friendly association of like-minded individuals.

Revolutionary reforms such as nationalization of industries and land, socialism, syndicalism, guild-socialism, and even anarchism, each have their group of labor adherents and pro-

ponents. But all these social reforms wane as prosperity returns. The tried and proven weapon of economic pressure is again wielded to produce desired results.

Economic Pressure.—Whatever weapons may be used in exerting economic pressure, the essence of that pressure is collective bargaining. Workers have found that they cannot face their employers as individuals upon equal terms. The worker must sell his labor power or lose it; the employer does not have to buy it; at least he does not have to purchase it just when it is offered. The employer can hire expert legal counsel to defend himself against labor, or may employ an expert bargainer to hire men. The workers claim these privileges, too; they want their leaders to defend them, and aid them in selling their services regardless of whether or not the leader is on the employer's pay-roll.

The Strike.—The principal economic weapon in defense of or aggression for collective bargaining is the strike. Labor unions did not invent strikes, for slave rebellions and peasant insurrections were essentially, for their times and in keeping with the labor organization of those days, the same labor protest against working conditions as is now thrust forward by strikes.

In the United States, strikes have accompanied the factory era, increasing in number by decades as the industrial revolution became more complete in scope and larger in the scale of its units. In the thirties and forties strikes averaged three a year, in the fifties six per year, and in the seventies thirty per year. Now we count them by the hundreds.

Likewise, whereas the earliest strikes influenced but scores of people in unrelated localities, today some strikes, such as that of the coal miners in 1922, directly affect hundreds of thousands of men, and indirectly are felt by the whole nation numerically and geographically.

Causes and Success of Strikes.—The causes of strikes are disputes over wages, hours, working conditions, union recognition in collective bargaining, union rules or regulations, and union jurisdiction. Apparently only about half of all strikes succeed. How then can unions view the strike as their principal weapon?

Success Not Dependent upon Settlement of Grievances.—The unions in a strike usually put forward a list of grievances that they think will capture public opinion, for the latter is a powerful lever in deciding strikes. The published grievances may or may not contain the real issue. If the strike produces any favorable action on the vital issue, the unions care little if the advertised grievance is lost or won. Hence a strike may be statistically a failure but actually a success.

Secondly, many strikes are merely battles in a long campaign. If the campaign finally achieves success the unions are not worried over the statistical list of battles in which they failed.

Finally, many strikes are means of advertising, strengthening, or hardening union forces. If these ends are attained the unions are satisfied even if they fail to get the things for which the strikes were ostensibly called.

For these reasons the apparent failure of half the strikes does not lessen their value in union opinion. And the unions know that they have no other weapon in their arsenal that has brought them so many or such valuable results as the concerted stoppage of work. Hence the unions resist any and all efforts that curtail the use of the strike and oppose all substitutes for it.

The Boycott.—The second economic weapon used by unions is the boycott, a refusal to patronize directly or indirectly persons whose views or policies are considered inimical to labor. The refusal of patronage always injures, and if

sufficiently general, may ruin a business against which it is directed.

Of course the boycott is not the exclusive weapon of labor organizations but is used by many other individuals and groups in society. Sometimes employers use it against each other.

Unlike the strike, the boycott in the hands of labor is less often a useful weapon in modern times than formerly. Practically the unions find it increasingly difficult to organize and carry out an effective boycott. What could be done in one village against, say a butcher, is hard to do in a nation against a packers' corporation. Theoretically the public cannot justify a boycott, especially an indirect one, as easily as it can a strike. Strikes are hot-blooded, direct and often on the side of right; boycotts are cold-blooded, indirect, and too often seemingly prompted by malice.

Without public support, labor cannot wield any weapon effectively, and the public generally is outraged rather than enlisted by a boycott. Legally, too, both the law and judges are harsh in condemnation of the boycott. So as a weapon for labor use the boycott is a decidedly doubtful offensive or defensive aid.

Blacklist.—A blacklist is similar in intent to a boycott. Unions are prohibited from using the device. Since they cannot do so without detection, for their lists must be published to reach their members, the edict against blacklists is operative. Employers, however, may and do use blacklists, not because they come less within the ban, but for the reason that they can indulge in greater secrecy. This makes such a device in their hands all the more odious.

Union Label.—A union label is positive, whereas a blacklist is negative. Since urging a man to buy articles on which the union label appears benefits the employer who can use it, and inasmuch as every purchaser may of his own free will buy

or not buy such a labeled article, the law cannot prohibit the attachment of union labels.

Of course, indirectly, an employer to whom a union will not grant the label privilege is injured. It is the purpose, in part at least, to coerce by this indirect means certain employers to grant to unions certain privileges, which leads the unions to issue the labels. But this use of labels is legitimate. In so far as employers grant union demands so that the employers may advance the interests of their business by means of the union label, the latter is an effective weapon in the hands of the unions.

The Closed Shop.—Closely associated with the foregoing economic weapons is the union policy of the closed shop. This phrase is here used in the usual sense of a shop closed to all workers except members of a union.

From the point of view of organized labor, maximum pressure cannot be brought upon an employer unless all the workers belong to a union. To induce workers to join the union, the leaders point out that the unions are fighting for the good of all labor. Since all receive the benefits of the struggle, all should support it. If the worker is not convinced by this plea, then the union thinks it is justified in bringing any kind of coercion to force the non-union men either to join the union or to leave the shop.

Employers in their turn say that workers, like any other group, may form associations to advance their own interests, but that no association may rightly force men into unwilling membership. That is, if a worker desires to stay out of a union it is his right and should be his privilege to do so. Furthermore, say the employers, a closed shop is a denial of the right to work to the non-union man. According to the employers this is both un-American and unlawful.

To the unionist the closed shop is part-and-parcel of collective bargaining. To the employer the closed shop may be

included in his animosity to unionism and all it stands for, or it may be a sincere belief that the closed shop, apart from other consideration of unionism, is dangerous to individual liberty.

Methods of Promoting Industrial Peace.—When industry was organized on the basis of small separate units, and when, correspondingly, unions were limited in membership and confined to narrow areas in their activities, then strikes or lockouts or any other form of industrial dispute could be conducted in the manner of a private war between an employer and his employees. The local public was but slightly affected and the general public hardly at all touched by the controversy.

But both industrial organization and union organization now are based on large units, and extend over wide geographic areas. Furthermore, every man, woman, and child in the country is now dependent for life itself upon an intricate subdivision of labor continuously operative. To prove this point to yourself, think of the labor involved in getting to you the components of your morning's breakfast, and ask yourself how long you could withstand the isolation of your community from the rest of the world. Industrial disputes in modern times interrupt the continuous flow of commodities and, in so doing, endanger the welfare, health, or life of the general public.

Consequently the public, all powerful when aroused and united, is beginning to say to industrial disputants: "You cannot any longer settle your differences by the method of private warfare. You must submit them to the orderly adjudication sanctioned by public authority. Your past methods are as much out of place in modern social organization as the settlement of personal quarrels by means of the duel."

Employer's Attitude.—Some employers, in reply, claim that the foundation of American policy is individual liberty, that every man has a right to do as he pleases with his own

property. The employer's business, they say, is private property, and public interference with business is therefore both intolerable and unlawful.

This contention of some employers loses sight of the fact that when private rights come in conflict with public rights the former must give way. The welfare of the general public is paramount to that of individuals.

Union Attitude.—Likewise some unionists resist the intrusion of the public into industrial disputes. The labor leaders insist that the right to strike must not be abridged. To do so, they claim, is to create involuntary servitude, a form of labor prohibited by constitutional amendment.

This argument confuses the right to strike with the right to quit work. The constitution gives every individual the right to quit a job that is intolerable. When a man quits, however, he vacates the job with no intention of return. A strike is not only a concerted rather than individual leaving of work, but it also presupposes a return to the jobs when the strike is over. If strikes, therefore, are made unlawful involuntary servitude is not imposed, for any individual may still quit if he pleases. Against the fog of such arguments and many others, slowly, gropingly, by many devices the public is seeking to prevent industrial strife and substitute orderly settlement of grievances.

Mediation and Conciliation.—Mediation and conciliation have been tried sometimes under private, sometimes under public authority. A mediator brings together the two contestants, employer and labor leader, who upon meeting settle their own troubles without further intervention of the mediator. A conciliator performs a similar service, except that he may take part in the settlement as chairman or referee. Since both of these methods lack compulsion either in bringing the two principals together or in enforcing their agreements, neither one has been marked with conspicuous success.

Arbitration.—Arbitration has been the next device offered. An arbitrator calls together the two factions, listens to each as it presents its case and then upon due deliberation over the evidence submitted renders a decision or award. Arbitration may be a private matter, arranged by an employer and his employees upon their own initiative and mutual agreement. It may be a trade or industrial policy either understood or the subject of a trade agreement. Chambers of commerce may supply arbitration machinery to settle troubles in their city. On the other hand, arbitration commissions may be the creation of legislatures. To these public commissions private industrial disputes may be referred either by the free will of the parties concerned, or upon compulsion by the law.

In all of these forms of arbitration the submission to arbitrators may be either voluntary or compulsory, and likewise the award may be voluntarily fulfilled or compulsion may be exercised to enforce the award. No form of arbitration has proved universally successful.

Tribunals.—The next step beyond arbitration is the creation of tribunals to hear industrial disputes. These tribunals are public bodies brought into existence by legislative enactment and are given some of the powers of courts, such as compelling the presence of witnesses, the production of books and papers bearing on a case, the employment of experts, and the hearing of evidence under oath.

The jurisdiction of most of these tribunals is over public utilities, but the latter may be defined as covering those industries concerned with food, clothing, and fuel, as well as what the term "public utility" has generally meant in the past, namely: railways, city light and power companies, telephone and telegraph companies.

Usually the law forbids strikes or lockouts in the industries covered by the law until the case has been presented to the tribunal. Ordinarily the decrees of the tribunals are not bind-

ing but are published and left to public opinion to enforce. In Kansas, however, the Industrial Court may appeal to the state courts to enforce its findings.

Some of the tribunals are composed of men who hold their position only for a particular case. This is true of the Canadian Investigation of Industrial Disputes Act. On the other hand, some of the tribunals are permanent bodies, such as the Kansas Industrial Court or the Railway Labor Board. Special tribunals have the advantages of speedy action and generally possess familiarity with the industry in which the dispute has arisen. Permanent courts are more consistent in their findings since they have had experience in many cases and are fully informed of precedents.

So far no industry not affected with a public interest has been compelled to submit its disputes to such tribunals, but the laws creating the tribunals usually invite all industries to make use voluntarily of the machinery set up. The reason for this distinction is that public opinion will support the use of public power to regulate disputes within public or quasi-public utilities, but the people generally are reluctant to compel private business to yield any of its supposedly private rights to public guidance.

However, if the control of industrial disputes in public utilities proves beneficial to the employers, the employees, and the public, it is probable that a way consistent with American ideas will be discovered to abolish private war in private industries.

In concluding this chapter it is well to stress the fact that the organization of labor follows the organization of the industry in which the worker gains his living. When the industry is scattered and disunited, labor is not likely to form associations. As industry becomes localized, organized in large-scale enterprises, and united, labor follows by installing unions. These take the form best fitted to cope with the industry, that of labor craft or industrial unions. Warfare between organ-

ized employers and organized labor eventually results in deadlock, for neither can destroy the other. The way, then, is made for public control of industrial strife, or the peaceful settlement of disputes by the parties themselves through devices they themselves create and maintain.

CHAPTER XVIII

MONEY IN THE INDUSTRIAL ORDER

Value Comparisons Expressed in Money Terms.—A striking fact about our society is the frequency with which our value comparisons are expressed in money terms. For instance, we say a man is wealthy who holds a title to 1 million or 100 million dollars, or we announce that a house is worth \$15,000, and that the yearly rent of a house is \$1,000. In like manner we declare that potatoes sell at \$1.50 per bushel or that a laborer offers his services at 50 cents an hour.

Capital also is measured in terms of dollars, while the use of the various other factors of production is determined by reference to possible profit, which in turn is translated into money terms. A person uses more or less land, more or less capital, more or less labor on the basis of whether or not it pays, a factor which is measured in terms of the relationship between the money expense and the money return.

Our whole scheme of economic organization today is guided and worked out on the basis of dollars. Success, health, recreation, and morals frequently have been given a dollar sign. In short, for the greater part of our activities the dollar is used as a measuring stick.

Relation of Money to Organization.—Economic organization, except the simplest kind, is the outgrowth of exchanging goods and services. Wherever a single family is independent economically, there labor, tools, and time are allocated to the production of things necessary to meet the elemental needs of that family. As there is no exchange with other families, to

produce a surplus would be sheer waste of effort. Roughly, the apportionment is on the basis of family needs, and the importance of the thing produced is measured in terms of the time and effort involved in producing it. For example, in the colonial family the use of labor, tools, and time were distributed in such a way as to meet the fundamental requirements for subsistence. Wants were few, production was on a small scale, specialization was little developed, and organization was simple.

Wherever social contact was established new wants were developed, some of which could be satisfied only by trade or exchange. By virtue of differences in ability, and possibly in resources, one group could produce certain things more effectively than others. In order to bring about an exchange, barter arose, either direct, or effected through an intermediate commodity.

As specialization increased, the need for exchange was seen more and more clearly, and in order to facilitate it money was invented. With the development of exchange, organization became increasingly necessary. The economically self-sufficient family, feeling the desirability of specialization of effort, welcomed the advent of local blacksmiths, millers, cobblers, or merchandisers who supplied by exchange the things the family had previously made for itself or had entirely lacked.

Such were the beginnings of trade specialization, production for a known market, differentiation of tasks, creation of surpluses, and the marketing of those surpluses by means of barter or money. The process of exchanging and the existence of markets caused organization to become increasingly elaborate and complex.

Money, then, facilitated exchange, and exchange made necessary some kind of economic organization.

Barter.—A system of direct barter is cumbersome and inadequate. It has three main difficulties: (1) the fact that

wants do not coincide; (2) the impossibility of finding a mutually satisfactory rate of exchange; (3) the fact that many articles cannot be subdivided without destroying much of their usefulness.

To illustrate the first difficulty, let us suppose a farmer has a surplus of potatoes and wants woolen cloth. He would doubtless be forced to search a long time in order to find in his community a man who had a surplus of woolen cloth; and even after such a person were discovered the probabilities are great that he would not want potatoes. The complementary wants of persons at a given moment are rarely likely to coincide, and hence much time and effort would be consumed in finding some one who wants just what you have, and has just what you want.

The second difficulty is even more of an impediment. In trading potatoes for woolen cloth one must settle the important problem of the ratio of exchange. Shall it be one bushel of potatoes for three, four, or five yards of cloth? Different people do not attribute the same values to a given thing. Wants vary a great deal among individuals, and therefore their estimates of the importance of a thing are not in agreement. In fact in bartering 100 different articles, there are as many as 4,950 possible different ratios of exchange. Therefore, in all barter the ratio of exchange is a problem most difficult to overcome without a common medium, and one which would of necessity greatly restrict exchanges.

The third difficulty, although not as important as the other two, is still a very real one. For instance, if a person has four yards of woolen cloth with which to make a suit, but half a yard is cut off and given in exchange for a loaf of bread, the original piece of wool is ruined so far as the suit making is concerned; the half yard, too, is of little possible use to the seller of the bread. You cannot take the windows out of a house without impairing the utility of the house, or remove the steering gear from an automobile without destroying the

power to operate the machine. Consequently a man whose only exchangeable resources were too great for the things he wanted in return, yet were indivisible, would be forced to sacrifice either the whole of his resources or forego his wants.

Necessity for a Medium of Exchange.—The difficulties and inconveniences of a barter system were soon discovered, and as people's wants increased and the pressure for exchange became stronger, the need for some common medium became urgent. This led to the use of some commonly desired commodity as a go-between in exchanges.

The experience with barter demonstrated two important functions for such a medium. It clearly indicated the advantage of a common unit in terms of which exchanges might be made, and also a method of measuring the importance which different persons place upon goods and services in exchange. The "go-between" commodity, therefore, where once it was adopted, served both as a medium of exchange and as a measure of values. Of the latter both present and future values became determinable. The selected commodity became in the region where it was adopted that district's *money*.

What Money Is.—Anything, then, which will pass freely from hand to hand throughout the community in the payment of debts and is generally accepted in exchange, may be termed money. Without going into details it may be interesting to indicate some things that have been used as money.

In the hunting stage, furs or skins; in the pastoral stage, cattle, sheep, camels, and even slaves; in the agricultural stage, corn, peas, indigo, tobacco; among primitive people, cowrie shells and whale's teeth. All these things have been used for money. After manufacturing obtained a foothold in the older settled communities, there were exported to Africa, South America, and India, cotton cloth, red handkerchiefs, and various implements which were used as money by the native tribes.

The idea of common or general acceptability attaches only to money. So long as the thing used as money will circulate among the people in general and will purchase other goods and services, so long it is money.

There may come a time, however, when the thing used as money becomes too inconvenient or loses value to such an extent that it practically ceases to be money. It loses, that is, its power of general acceptability. This has been essentially true of some forms of paper money.

The Continental Congress issued revolutionary bills of credit which at first passed at par, but as the number increased and as the success of the revolutionary armies grew more and more uncertain, people became skeptical in regard to the notes and at first accepted them in exchange for goods and services only at a part of their face value. Conditions finally became so bad that the majority of people refused to accept them at all; they ceased to be money in that they lost all power of general acceptability. "Not worth a continental" is a slang phrase expressing their worthlessness. Recent experience with the German paper mark or Russian paper ruble is similar.

There are instruments of exchange which are generally acceptable only in a restricted territory but which cannot be classified as money. One such instrument is a check which passes from person to person by delivery if drawn to "bearer" or by indorsement if drawn payable to the order of a certain individual. These media will circulate only when the name of the maker or indorser is known. Moreover, they have to a high degree the "homing quality," that is, they very soon are deposited in a bank and sent back to the bank on which they are drawn and presented for payment. Such an instrument will temporarily and within a limited series of transactions fulfil all the requirements of a medium of exchange.

The Functions of Money.—Money has three fundamental functions; it is (1) a medium of exchange, (2) a standard

of value, (3) a standard of deferred payments. All of these functions are important in industrial organization. Through money as a medium of exchange, trade is greatly facilitated between individuals, between different sections of any country, and between nations; through money as a standard of value, comparisons and estimates are made possible by the enterpriser and by society which are a guide as to whether production is profitable or whether the use of more or less of any single factor in production is desirable; through money as a standard for deferred payments credit relations may be established and proper comparisons instituted as to amount of future payment.

1. A Medium of Exchange.—Money as a medium of exchange is merely a good tool or instrument in effecting the interchange of goods and services. Like any other good tool, money is given importance by virtue of what it does. We want money not because it has any magical quality by which it of itself feeds, houses, clothes, or renders enjoyment, but because we can readily exchange it for things which will gratify our wants.

Since the possessor of money commands virtually a right or title to goods and services, money is desired for the industrial or social power this command gives. Money, then, save in a very few cases—the miser, for example—is not prized for its own sake, but for what it will do. It is an excellent device and is rated just like any other—because it accomplishes certain definite results.

2. A Standard of Value.—As a standard of value money performs quite a different service. It not only simplifies our thinking, by facilitating comparisons, but it serves as a guide in our business transactions.

To illustrate, if a storekeeper had twelve articles for sale and there was no common measure of values, he would be required to remember no less than 66 different ratios of

exchange. With the use of money all he needs to do is to bear in mind the exchange ratio for each article with money, or 12 ratios in all, hence his calculations are easy. A common measure of values is even more important than a yardstick, or a pound, or a gallon. It facilitates, just as do the other standard measures, all computations and therefore adds immeasurably to the expansion and organization of business.

Through the use of the dollar as our measuring device, we have a way of expressing the value of all other things in a common unit which is readily understood. In practice we quote all exchange ratios in the form of prices, but a money price is nothing but the expression of values in terms of money. To ask fifty dollars for a given suit of clothes merely signifies that the relation of exchange between the suit of clothes and dollars is as 1 to 50. Money, then, in this function is a standard to which other values may be referred and in terms of which they may be expressed.

3. A Standard for Deferred Payments.—In regard to deferred payments, the third function of money, little need be said at this point. Money greatly develops the use of a credit system, for it at once gives a basis of comparison and also a convenient medium by which the transfer of credit may at times be effected. The principal use of money in this connection is that of determining how many dollars shall be given back at some future time.

• A man may buy today \$10,000 worth of commodities and agree to pay the sum ninety days hence, or he may borrow today \$10,000 and promise to pay it back with interest in 1932. Although there is no assurance that the dollar will purchase as much in ninety days or nine years as it does now, nevertheless the expression of the debt in terms of dollars and the understanding that it shall be paid in dollars aids the whole credit operation. Without the use of money, credit would be largely a negligible factor in business.

Qualities of Money: 1. Intrinsic Value.—Always and everywhere there are certain qualities which make the thing selected desirable as money. The most important quality is that of value. The thing must have power in exchange; that is, it must be of such a character that for one reason or other people generally will take it in exchange for the goods or services which they have to sell. This would not be true unless the article itself were prized and desired by most of the people in the community.

It might be an article desired for ornament, such as the wampum of the American Indians; or a war utility, such as arrow heads and bullets; or a common utensil, such as fish hooks and edge tools; or a desired consumption goods, such as tobacco and dried peas—all of which have been used as money.

Even in a complex and highly developed society using gold as a measure of values, there is as yet no departure from this primary quality of intrinsic value. To be sure, the matter at present is largely psychological and few persons put their paper substitutes to the test. But in times of emergency, such as a panic, there is a rush made upon the banks to test out the goodness of these claims upon governments and banks by presentation for payment in gold or its equivalent.

2. Stability of Value.—Another quality highly desirable is stability of value. Wherever an article fluctuates widely in value over relatively short periods of time, it does not constitute a good standard of value; that is, a unit in terms of which all other values may be expressed. Thus tobacco, cotton, or furs are not satisfactory forms of standard money.

Advantages of Metals for Use as Money.—Metals superseded other articles as money because of certain mechanical requisites which made them more convenient and better adapted to the purpose of circulation. The most important of these

mechanical qualities were: (1) relative ease with which the thing could be transferred from one person to another; some commodities such as cattle were too bulky to pass this test; (2) the durability of the article; some things, such as peas, were perishable, and easily worn out by constant handling; (3) uniformity of quality throughout, so that one lot was exactly like every other lot; this was not true of tobacco currency because there were four different grades of tobacco raised; (4) divisibility without loss of value; this was not true, for instance, of furs; (5) and for purpose of circulation it was necessary that the article selected be capable of taking a stamp which would make it easily and quickly recognized. Metals satisfy these requirements.

Gold and Silver Admirably Adapted for Use as Money.—

Of all the articles used as money, gold and silver most nearly meet the requirements set forth above, and gold better than silver. Consequently it happened that up to the outbreak of the World War most of the countries had adopted gold as the standard money metal; China was the most important exception. By reason of a large increase in paper currency and the depletion of gold reserves during and after the war, the countries of Europe, for the most part, are at present unable to pay demands upon them in gold, and are therefore struggling with a depreciated paper standard.

From the point of view of value, stability of value, and convenience, gold is the best-known substance to use as money. Inasmuch as gold either in the form of coins or paper certificates—warehouse receipts for gold—circulates very little in the United States, the mechanical qualities are no longer of much practical importance. They do, however, still apply to silver and the minor coins.

The Money of the United States.—For the sake of economy and convenience, practically every country of the world

has a number of different kinds of currency in concurrent circulation. Simplicity is quite as desirable as in any form of organization. From the standpoint of utility, currency should be issued merely in those forms which will best meet the tests of economy and convenience. Thus a standard coin, minor coins, and a single type of paper currency would adequately meet the requirements.

There has been little attempt in the United States to establish such a logical system or to be at all consistent in the issue of currencies. Our representatives have shown little prevision in this field of legislation. Some forms of currency have been issued not on a basis of good monetary theory, but largely to meet war needs or embarrassing political situations, or as an expedient for retiring some other form, with the result that our currency is a good deal of a hodgepodge.

There are ten different kinds of money in circulation: (1) gold coins, (2) gold certificates, (3) silver dollars, (4) silver certificates, (5) fractional silver coins, and minor coins of nickel and copper, (6) United States notes, (7) treasury notes of 1890, (8) national bank notes, (9) federal reserve notes, and (10) federal reserve bank notes. These are divided into three general classes: standard money, representative money, and credit money.

Standard Money.—Every nation has a standard monetary unit in terms of which all other values are measured, and in connection with which final payment is made. In England the standard coin is the gold sovereign, in France it is the franc, in Germany the mark, in Italy the lira, and in J  pan the gold yen.

In this country the standard coin is the gold dollar, which contains 23.22 grains of pure gold. This weight is constant, and arbitrarily fixed. In 1834-36 the government decreed that the ratio between gold and silver in coinage should be 15.88+ to 1; that the gold dollar should contain 23.22 grains fine gold,

and the silver dollar 15.88+ times 23.22 grains of fine silver, or $371\frac{1}{4}$ grains. This ratio has never been changed.

Fine gold is too soft for circulation. To meet this embarrassment the government adopted the device of 9/10 fineness; that is, for every nine parts gold there should be added one part copper as an alloy to give the requisite hardness to the coins. For this reason the full or standard weight of the gold dollar is 25.8 grains.

The government buys gold at the rate of \$20.67 per fine ounce and this is known as the mint price. Practically all gold produced in this country and all gold imported without well-attested marks as to weight and fineness finds its way to the assay offices. The government mints gold coins in the denominations of \$20, \$10, \$5, and \$2.50 pieces. Formerly, gold dollars were struck at the mint, but since 1890 this practice has been discontinued because of the smallness and hence inconvenience of the coin for circulation purposes. At the present time the gold of the country is largely held in the vaults of the Treasury or the banks, and very little, if any, is seen in actual circulation. In a word, it is too expensive a tool to use in circulation, and, furthermore, other forms are much more convenient to be carried in the pockets of the people or in the tills of merchants. Gold is used by the banks and the government for reserve purposes.

Representative Money.—Representative money consists of gold and silver certificates. These are really receipts for gold or silver. Back of every gold and silver certificate the Treasury at Washington holds dollar for dollar the actual gold and silver. Gold certificates are issued in denominations of \$10 and upward to \$10,000. For the most part, they find their way into the hands of banks and are used comparatively little in general circulation. Silver certificates are issued mainly in small denominations and circulate in place of the silver dollars.

Credit Money—Metallic.—Credit money is composed of two forms: metallic and paper. The silver dollar contains $371\frac{1}{4}$ grains of pure silver, and at the current market price of silver—68 cents per pound—this $371\frac{1}{4}$ grains is worth about 51 cents gold. It passes in trade at one dollar, therefore the difference between 51 cents and the face value of the coin is credit.

The same is proportionally true of the fractional coins, but the gold value of the silver content is even less for the fractional silver coins since they are debased by law 7%. In making these coins the government puts 7% less than 185.6 grains of pure silver (which is one-half of $371\frac{1}{4}$ grains) in the half dollar, and 7% less than 92.8 grains in the quarter dollar, and 7% less than 37.1 grains in the 10-cent piece. The reason for this "debasement," as it is called, is to keep the fractional silver coins in circulation in case of a decline in the value of silver.

Credit Money—Paper.—In general, paper money is a promise to pay on demand the sum stated on the face of the note, the promise being made by the issuer, either the government or a bank. One type of such paper money which the government has in circulation consists of \$346,681,000 of notes known as United States notes, or "greenbacks." These notes were issued during the Civil War to defray the immediate expenses of the government. The apparent purpose at first was to retire them as speedily as possible, but after a few years of a checkered history of retirement, political pressure was brought to bear, and in 1874 the amount of these notes was definitely fixed at the above-mentioned figure, and from that time to the present the amount has been the same.

Besides the "greenbacks" there are still in circulation something over a million of Treasury notes of 1890. These notes are similar in form and denomination to the "greenbacks." They were issued in the years from 1890 to 1893 for the

purpose of purchasing silver. The law authorizing them was hastily repealed in 1893, and by acts passed in 1898 and 1900 the retirement and cancellation of these notes commenced. Retirement has proceeded until a comparative few are left. The probabilities are that most of these, which are carried on the books of the Treasury, have been lost and will never be presented for redemption.

Bank Credit Money.—Our bank credit money is made up of national bank notes, federal reserve bank notes, and federal reserve notes.

The national bank notes are the direct obligations of national banks and are secured by a deposit of 2% circulating bonds of the United States; the federal reserve bank notes are similar, only they are issued by some one or all of the twelve federal reserve banks.

The federal reserve notes are the direct obligations of the twelve federal reserve banks, guaranteed by the government, and secured by a deposit of gold and commercial paper; as a matter of practical fact these notes at the present time (1923) are in large part backed dollar for dollar by gold and hence are essentially gold certificates.

The Manufacture of Money.—The government of the United States has a monopoly in the manufacture of money, although for nearly forty years money was made in this country on private account. Between 1830 and 1860 there were numerous concerns making gold coins. These coins, however, varied a great deal in weight and in the amount of pure metal put into the coin; they were essentially ingots of gold bearing a private stamp. Although there was no intention on the part of these private concerns to deceive, the people found it difficult to discriminate between the different coins, and in 1864 the government prohibited private coinage.

In the process of coinage, metal is first assayed. For this

purpose it is melted and run into bricks of a convenient size. When these bricks are cooled, two pieces are taken off from opposite corners and are tested to determine the exact amount of impurities. When this is known, the metal is remelted, treated by a chemical process to remove all impurities (refining), and then an exact amount of copper or other metal is added (alloying) to give requisite hardness.

The alloyed metal is next run into strips or ribbons of the exact size and thickness necessary for the different coins which are to be made. From these ribbons, blanks—circular pieces—are cut. These blanks are very carefully tested by experts both by weighing and ringing. If too heavy some of the metal is filed off; if too light they are returned to the melting pot. The perfect blanks are put into cases and taken to the coining machine which prints the insignia on both sides of the coin and at the same time rims and indents the edge. The coins are then ready for circulation.

There are now (1923) in the United States three mints, one each at Philadelphia, Denver, San Francisco—and eight assay offices. The mints and assay offices buy gold from the owners at the mint price; that is, the coinage of gold is free to all. The silver, nickel, and copper is bought on government account. The amount of our fractional coins is entirely regulated by the demands of trade. When the demand increases, authorization is given for the purchase of more metal and the making of coins. Thus during the war, on account of special taxes, there was a very sudden demand for pennies which had to be met by new coinage.

There are, therefore, four processes in coinage: (1) assaying, (2) refining, (3) alloying, (4) coining. Once the coins are made they are distributed by the Treasury or through the federal reserve banks.

Making Paper for Money.—The paper for notes is made by a secret process under the supervision of the government.

The contract for this paper is made each year on the basis of bids submitted by various paper-making companies. The bureau of engraving and printing has charge of the printing of all notes in appropriate denominations and after printing these are held by the Treasury subject to the call of the federal reserve agents, or the banks. There are elaborate and careful provisions for the redemption and cancellation of worn, torn, or soiled notes.

Issue of Money.—A brief mention should be made of the important principles upon which the issue of metallic money is based. These principles are: (1) coinage only on government account, (2) issue in limited amounts, (3) limitation of legal tender, (4) redemption in standard money.

Fractional coins in particular are of so much importance in effecting exchange that every possible protection needs to be given them. In order to keep the fractional currency at par and to make it a convenient medium of exchange, the four principles noted above were applied to it.

During the Civil War practically all metallic money went out of circulation, and resort was made first to postage stamps and later to small editions of the larger government paper notes, popularly known as "shin plasters." These were a great nuisance, for they were easily lost, easily counterfeited, and very inconvenient to handle.

Legal Tender.—By legal tender is meant that a person offering or tendering currency in payment of debt has satisfied the requirements of the debt and is thereby freed from payment of interest and the costs of suit brought against him for non-payment. It is a lawful tender in payment of debt.

If party A owes \$100 to party B, and tenders in payment to party B \$100 in notes which by law are a full legal tender, and party B refuses the tender, the debt of A to B is not thereby canceled but A is freed from paying interest or costs of suit.

The object of a legal tender provision is: (1) to force into circulation money which might not otherwise be accepted, or (2) to provide convenient media in which debts may be paid.

In the United States, gold coin and gold certificates are full legal tender. Silver dollars, silver certificates, and Treasury notes of 1890 are full legal tender unless otherwise expressed in the contract; and United States notes are full legal tender except for duties on imports and interest on the public debt. National bank notes, federal reserve notes, and federal reserve bank notes are not legal tender between individuals, but are legal tender between banks and in all payments to the government with the exception of duties on imports. Fractional silver coins are legal tender to an amount not exceeding ten dollars in one payment, and copper cents and nickels to an amount not in excess of 25 cents in a single payment.

Keeping Money at Par.—The different forms of money in the United States are kept at par, that is, equivalent to gold, by a process of redemption. The law states that it shall be the duty of the Secretary of the Treasury to maintain all forms of money at a parity of value with the gold standard.

Fractional and minor coins are directly redeemable when presented in sums or multiples of twenty dollars. United States notes—greenbacks—have a special gold fund of 150 million dollars, out of which direct redemption may be made. Bank notes of all varieties are directly redeemable over the counter of the bank issuing them, or out of a 5% gold redemption fund kept for that purpose in Washington.

Silver dollars, and hence the silver certificates which are convertible into silver dollars, are in a class by themselves. They are not definitely redeemable in terms of gold, but a system of indirect redemption has been worked out which to all practical purposes is effective in keeping them at par. They

are received in all payments due the government the same as gold. Furthermore, the government will not force silver on an unwilling creditor but will pay gold on demand. Inasmuch as the Secretary of the Treasury is authorized to maintain at par all forms of money in the United States, it is undoubtedly true that in case of emergency he would have to find some way of redeeming silver dollars in gold.

CHAPTER XIX

CREDIT IN THE INDUSTRIAL ORDER

The Nature of Credit.—Not all exchanges of goods or services are transacted on the basis of immediate payment in money; in fact comparatively little of our total business is done in that way. If a person goes to a store and buys a pair of shoes he may pay for them in cash, or he may promise to pay for them in ten days or two weeks when he has received certain expected remittances. The one method involves immediate payment, the other method involves credit or deferred payment. In the credit transaction a person receives the shoes he wants and the merchant receives either a verbal promise to pay in the future, which results in an entry on his books, or some written evidence which constitutes a claim on the purchaser for money in the future.

Credit is sometimes defined as a promise to pay in the future for some valuable consideration received in the present. The promise, in fact, may be nothing more than a right, title, or claim to the payment of money when some credit instrument is presented to the person or persons on whom it is drawn. In credit, deferred payment is always involved, and by deferred payment we mean ultimate and final payment in something of actual, tangible value. In the example cited above, the "valuable consideration received in the present" is the pair of shoes; and "the promise to pay" may be an open book account, a promissory note, a check, or some other familiar type of instrument.

It is interesting to note that the deferred payment need not be money in order to have a credit transaction; it could quite

as well be goods or services, or, as so often happens today, a check, draft, or some other right or title to final payment in money. In view of the fact that practically all business transactions are reduced to the common denominator of values, namely, money, it is essentially true that the credit instrument is a title to money payable on demand or at some future specified date.

Why Credit Is Used.—The question naturally arises, why is credit used—why are payments deferred or delayed? Some of the reasons are: (1) it is more convenient; (2) it economizes the use of money which is at best an expensive tool; (3) it anticipates future receipts of borrowers and makes possible purchases at times when such purchases are most useful; (4) it gives individuals with business ability capital for immediate use in production and trade; (5) it enables business transactions to be conducted on a large scale; (6) it facilitates the best uses of goods and services as well as distributing widely such uses. Without credit business engagements on the scale they are now conducted would be impossible, and much of our present complicated industrial organization could not exist.

Credit and Honesty.—Credit presupposed a high degree of business honesty. Where credit is involved honesty is not only the best policy, it is the only policy. This is not gainsaying the fact that here and there a person may "beat the game," that is, although dishonest and unscrupulous, may obtain for a time the use of credit. That is a weakness of the credit system. But if everyone or even any considerable number of persons were dishonest or failed to meet their obligations promptly, the whole credit structure would tumble down like a house of cards.

There come times, all too often, when credit has been unduly and unwisely extended, when the base is too small for the great superstructure reared upon it, and some slight busi-

ness misfortune causes the whole structure to topple over. Then there is suffering, workmen unemployed, business failures, large losses, business stagnation, retrenchment, and an ultimate readjustment. The whole machinery seems to give way and bring economic disaster. Such was the case in 1873 and again in 1893 in the United States. Credit is an exceedingly delicate instrument which must be handled wisely and carefully.

Who Gets Credit?—It is self-evident that a bank or an individual will not grant credit—the right to defer payment—to anyone and everyone. A newcomer in a town finds that merchants and banks are very cautious and will not accept checks, make loans or sell goods on credit, unless some one known to them vouches for the character and the newcomer's ability to make payment. The foundation on which credit rests is confidence in the borrower.

This confidence is established through knowledge of the borrower's "will to pay" and "ability to pay"; it rests upon the character of the individual, his reputation for successful business dealings, the amount of property he owns, or his power to get property with which to make payment.

A bank in making a loan of \$10,000 to Smith, Brown and Company, wholesale shoe merchants, will want to know what their credit rating is, that is, their business reputation and standing. Furthermore, if the bank is at all conservative in making loans, it will require the firm to file a complete statement of their business. This statement shows the relation of assets to liabilities, and gives a fair indication of the firm's power to make repayment at the maturity of the loan. Through the statement the bank has detailed information concerning the business methods and practices of the borrowing company.

Moreover, the reason why bank notes, government notes, and other demand obligations of banks and governments cir-

culate at par is the faith which people have that payment will be made promptly on demand. And this faith is based upon the reputation of the issuer as well as upon the special security deposited to protect the obligations.

Kinds of Credit: 1. **Personal Credit.**—The important classes of credit are: (1) personal credit, (2) public credit, (3) commercial credit, (4) industrial credit, (5) agricultural credit, and (6) bank credit.

Personal credit is that granted to an individual, often for short periods of time, which enables him to make immediate purchases. The evidence of the credit may be an entry on the books of the seller—hence the name “book credit”—or a promissory note payable thirty, sixty, ninety, or more days after date. Often the fund advanced or the deposit created is utilized to purchase goods for immediate use, and for this reason the term “consumption credit” is often applied to it. Security for the credit is largely personal; that is, it is found in the character of the maker of the note or of the maker and the indorsers.

2. **Public Credit.**—This refers to loans made to governments: federal, state—or subdivisions of a state—and municipalities. Such credit may take either one of two forms.

In the first place it may be of short duration and based upon certificates of indebtedness which run for three to six months, or possibly somewhat longer periods. These certificates were put out in large volumes during and after the recent war and were used to anticipate receipts from taxes, customs duties, or long-term bond issues. Expenditures were being made every day, but receipts came in at stated periods. In order to provide funds to meet the daily requirements of our government, the Treasury had to issue these short-term certificates. From April 5, 1917 to October 31, 1919, the Treasury issued over 32½ billion dollars of such certificates. Treasury

certificates of indebtedness, as they are called, are nothing more than the government's promise to pay at the expiration of six months from date with interest at a definite rate.

Government borrowing may be also in the form of long-term bonds which run ten, twenty, thirty, or more years. In this case there is a promise to pay the principal at maturity with interest at a definite rate, payable quarterly or semi-annually. These bonds may be either coupon bonds—bonds having the interest coupons attached—or registered bonds. If coupon bonds, the interest is paid to the person who presents the coupon; if registered, it is payable only to the holder of record; that is, the person whose name is on the books of the government as the owner of the bonds.

3. Commercial Credit.—This represents the borrowing of wholesalers, retailers, jobbers, manufacturers, and others. The purpose is to furnish working capital to such enterprises. A manufacturer, for example, needs to buy woolen yarn, coal, oil, labor, and other things which enter directly into the process of manufacture and which are used up in connection with this particular production period. The proceeds are applied in financing immediate needs with the exception that the sale or resale of goods will put the borrowing concern in funds to pay off the loan at maturity.

There are various forms of paper which evidence these obligations, such as the promissory note, the bill of exchange, and the trade acceptance. Security lies in the character of the borrower, but more particularly in the goods which are the basis of the loan. Such loans are most often of short duration, to cover the production or resale period. A merchant, for example, borrows on a six months' collateral note in order to restock his store. At the expiration of the six months he expects that the goods will be sold and the proceeds will furnish the means with which he will be able to pay off his note at the bank.

4. Industrial Credit.—This is the credit granted to corporations for the purpose of fixed capital requirements. The company wishes to buy land, erect a building and equip it with machinery; or to purchase the properties of a competing concern; or if a railroad company, to equip itself with rolling stock, such as locomotives and freight cars. In order to do this it may issue a series of long-term bonds which it will sell to the investing public.

These bonds are elaborate promises to pay on the part of the borrowing corporation; they run for long periods of time, maturing perhaps in twenty-five or thirty years, and are secured by the general property of the company, by other stocks and bonds, or by the equipment which has been purchased.

Capital invested in these ways is relatively fixed. A building especially constructed for steel production is of little value save as it is used for that specialized purpose. A railroad once constructed can be of service and can earn its power of repayment only as it carries freight and passengers. Capital once sunk in such an enterprise can be released only after much time has elapsed. The ownership of it may change through the sale in the market of the paper certificates which represent the property, but the property itself cannot well be shifted from one use to another until through a period of time its replacement has been earned. This form of borrowing does not readily lend itself to quick conversion into money in case of need, and hence appeal must be made to investment banks and investors that specialize in long-term loans.

5. Agricultural Credit.—This is granted to farmers either for the purpose of financing their crops or in order to buy land and machinery or to erect buildings. In the first case the credit is extended in the form of a short-time loan which covers the crop period, usually about six months. The farmer needs to buy seed, or fertilizer, and to employ labor in the spring that

he may plant and care for the crop. After the crop is harvested and sold in the fall he pays off his loan.

The credit in such cases is largely of a personal character and is evidenced by a six months' promissory note. If the farmer wants to buy more land or erect a barn, however, he will mortgage his property and then pledge—or as it is sometimes called, "hypothecate"—his property as security for a loan running for a number of years.

6. Bank Credit.—This is probably the form with which people are most familiar. The simplest form of bank credit is the bank note which is issued by certain banks in this country. The bank note is merely a bank's own promise to pay on demand. It is used as "till-money" by the bank and may be paid out along with other kinds of money by the paying teller of the bank whenever customers present checks for immediate payment. These notes circulate readily from hand to hand, and are one kind of money.

In the main, however, bank credit consists of collecting funds from widely varying sources and then assuming a great volume of demand obligations in the form of deposits against which it holds certain reserves. An individual creates a demand deposit at the bank by presenting money, checks, or other demand items, or by borrowing from the bank on the basis of promissory notes and other instruments. The bank then gives the depositor the right to draw by check on this account.

The security for bank credit is in part special, such as the capital of the bank; the double liability of its shareholders; bonds, gold, or commercial paper back of the bank notes; the 5% redemption funds; and required reserves. In part, however, the security is general and rests on the confidence which directors and managers have inspired in the public through many years of faithful and careful service; it is that intangible thing which we call "good-will."

Credit Instruments.—There are a number of different forms of credit instruments in common use. Some of these, like the promissory note and the time draft, call for payment at a future date. Others, like the bank note, check, sight draft, certificate of deposit, and money-order, are credit instruments in the sense that ultimate or final payment in money is deferred. They represent the right or title to payment on demand.

Pieces of paper, having no tangible value in themselves, are passed from hand to hand and are utilized in the process of exchanging goods and services. Those who receive these instruments in exchange for goods have confidence that they will be received at par by banks, and that on demand, payment in gold will be made.

Credit instruments may be classified as money credit instruments, commercial credit instruments, and bank credit instruments. Two important types of commercial credit instruments are a promissory note (promise to pay) and a time draft (an order to pay).

1. Promissory Note.—This may be defined as an unconditional promise to pay on demand or at a definite or easily ascertainable future date, a certain sum in money. The parties to the note are the maker (the one signing the note) and the payee (the one whose name appears on the face of the note and to whom the amount is to be paid). These notes are usually drawn payable to order of bearer.

The statement of the place of payment has a practical necessity in that it is desirable to know where the note is domiciled and where it may be presented for redemption. After "value received" the words "with interest" or "with use" are sometimes added to indicate that interest is payable.

This note can be indorsed by the payee writing his name across the back. The effect of an indorsement is to transfer the right of payment to the next holder of the note.

The note, then, may be discounted at a bank, which constitutes practically a sale of the note to the bank at the prevailing rate of discount. If the payee did not want to wait the three months to the maturity of the note, he could by this sale to a bank receive the full amount less the interest for three months at 6%. The bank purchases the note and credits the seller with the face less interest. The bank will wait three months, or whatever may be the unexpired time to maturity, before it receives payment.

2. Draft or Bill of Exchange.—This is an unconditional order of one party upon a second to pay to a third a definite sum of money at a definite time. The drawer of the instrument is the one who makes the order, the drawee is the one on whom the order is drawn, and the payee is the one to whom the payment is to be made. Sometimes, the drawer and the payee are the same persons; the draft is then drawn “pay to the order of ourselves.”

There is little consistency in the use of the word “draft” and “bill of exchange.” In the common business vernacular, they are quite likely to be used interchangeably. In some cases the word “draft” is applied to a banker’s instrument in which the drawer and the drawee are both banks. Thus a New York draft drawn by a bank, say in Utica, New York, which has an account with a New York City bank orders the New York bank to pay out a certain sum of money to a third party mentioned in the draft. The draft takes its name from the place where funds are payable: e.g., New York, Boston, New Orleans, or San Francisco.

The term “bill of exchange” sometimes is used to indicate orders drawn against individuals or firms. In this case the drawer is a firm or individual, the drawee is a firm or individual, and the payee is a bank or “ourselves.” These instruments arise out of a buying and selling operation in which the seller draws on the buyer and then discounts the bill with his

local bank. There is a growing usage, however, to restrict the word "draft" to domestic or inland transactions, and the word "bill of exchange" to foreign or international credit instruments.

Acceptances: Banker's Acceptance.—There has been developed in foreign countries, for a great many years, and revived in the United States since 1913, a particular form of draft which is called an "acceptance." These acceptances are of two kinds: (1) banker's acceptances, and (2) trade acceptances.

The "banker's acceptance" is a draft drawn in regular form upon which the words "accepted," a date, and the signature of the acceptor are written across it in red ink. The person or firm accepting recognizes the obligation as one which is valid and one which he—or they—will pay at maturity. The force of the acceptance legally is to make the document of the same tenor as a promissory note. The order now becomes a definite promise on the part of the acceptor to pay—the acceptor in this case being the drawee—and therefore gives a clear legal claim to the holder of the instrument against the party accepting.

The Federal Reserve Act and various state banking laws give banks the right to accept the paper of their customers under certain restrictions. Section 13 of the Federal Reserve Act reads:

Any member bank may accept drafts or bills of exchange drawn upon it having not more than six months' sight to run, exclusive of days of grace, which grow out of transactions involving the importation or exportation of goods; or which grow out of transactions involving the domestic shipment of goods provided shipping documents conveying or securing titles are attached at the time of acceptance; or which are secured at the time of acceptance by a warehouse receipt or other such document conveying or securing title covering readily marketable staples. No member bank shall accept, whether in a foreign

or domestic transaction for any one person, company, firm or corporation to an amount equal at any time in the aggregate to more than ten per centum of its paid-up and unimpaired capital stock and surplus, unless the bank is secured either by attached documents or by some other actual security growing out of the same transaction as the acceptance; and no bank shall accept such bills to an amount equal at any time in the aggregate to more than one-half of its paid-up and unimpaired capital stock and surplus.

In 1917 this clause was amended to permit member banks—that is, banks belonging to the federal reserve system—on approval of the Federal Reserve Board, to accept up to 100% of their combined capital and surplus bills growing out of the export and import of goods; or bills arising from the domestic sale or transfer of goods, provided such sales are secured by bills of lading or warehouse receipts.

Trade Acceptance.—The other type of acceptance which has been considerably developed since 1913 is the “trade acceptance.” This is similar in form to the banker’s acceptance, but there is this difference, that in the banker’s acceptance a bank writes “accepted” across the face of the bill, while in the trade acceptance, a corporation, firm, or individual is the acceptor.

Suppose, for instance, that Sherwood Hall and Company, Middletown, Connecticut, have bought goods of the John Brown Company of New York, the total value of which is \$3,000. Payment for the goods might be made by cash or check, by promissory notes, by an open book account or by trade acceptance.

The older method established during the Civil War was the open book account with liberal cash discounts to insure prompt payment in cash. If Sherwood Hall and Company have an excellent credit rating, they could make a promissory note, have it discounted by their bank, and use the proceeds to pay the John Brown Company by check, thus taking advan-

tage of the liberal cash discount. If, however, they were not in good credit, or if they had exhausted their line of credit at the bank, they would be forced to allow the account to stand on the books; on their own books a credit in favor of John Brown Company, "bills payable," and on the John Brown Company's book a debit against Sherwood Hall and Company, "bills receivable." In this arrangement the seller is forced to carry the buyer for a period ranging from thirty days to six months, and then perhaps face the possibility of a renewal.

By using the trade acceptance the seller of the goods may transfer the carrying of the obligation to a bank. In the trade acceptance method of payment, the John Brown Company sends with the invoice a trade acceptance form properly filled out for the amount due. Sherwood Hall and Company on receipt of this document will properly "accept" it and return it to the John Brown Company, thus closing the transaction.

The John Brown Company now takes the acceptance to its bank and has it discounted, or else, through traders and brokers, sells it in the open market. In either case the company is put in funds at once in the form of a deposit credit at its bank. Near the time of maturity the bank or firm holding the acceptance will forward it for collection to the bank where it is payable.

Another method of using the trade acceptance may be illustrated from the flour milling business. Suppose that the Pillsbury Milling Company has sold a consignment of flour to H. C. Crosby and Company, wholesale flour merchants, Buffalo, New York. It is understood between them that the seller shall draw upon the buyer for the amount of the invoice. The Pillsbury Milling Company prepares the flour for shipment and gets the bill of lading (railroad receipt) and insurance papers. A ninety-day sight draft is then drawn upon H. C. Crosby and Company and the documents (bill of lading, insurance papers, and invoice) are attached. This draft is taken to the bank in Minneapolis with which the milling com-

pany does business, and is forwarded by this bank to a bank in Buffalo. The Buffalo bank presents it to H. C. Crosby and Company for acceptance and the Crosby Company writes across the face in red ink the word "accepted," the date of acceptance, and its signature. The bank now releases to H. C. Crosby and Company the attached documents, for it has in place of these an acceptance which is an irrevocable promise to pay at maturity. The accepted draft is sent back to the Pillsbury Milling Company and they may hold it until maturity, or if in need of funds, they may discount it with their bank.

Relation of Credit to Organization.—It would be difficult to measure with any exactness the importance of credit to industrial organization, but we do know that it is an extremely vital link in the chain of business relations. The retailer sells on credit to his customers, the wholesaler sells to the retailer, the jobber to the wholesaler, and the manufacturer to the jobber on a credit basis. The manufacturer buys his raw materials, and raises money to pay the wages of his laborers on credit. A railroad company, a steel corporation, or a public utility organization desiring to expand its plant, may sell a series of bonds and use the proceeds to build a new station, erect a new building and equip it with machinery, or to buy up the properties of a competing street-lighting concern.

A great financial panic such as that of 1907 in the United States shows only too well how dependent the business community is on a regular flow of credit. During the fall of that year a large number of banks and banking houses had to close their doors because they had insufficient funds to meet the insistent demands of their depositors; retail and wholesale businesses failed for the reason that the banks could not or would not renew loans, or create more credit to meet the unusual circumstances; manufacturing companies had to close down altogether or operate on part time through failure to obtain capital with which to meet their current obligations.

It was a time of great shortage of money, and individuals in many sections of the country found on going to the bank with checks, that the bank would refuse to cash the check or would give only a small part of the amount desired. In one Vermont town an organ company had large orders in hand for organs from Australia and from England, but in spite of these assured orders they had to shut down their factory for more than three months, and throw out of employment over a thousand men, simply because they could not get the accustomed accommodations from local banks.

A Credit Age.—We are living in a credit age. Borrowing is the very life-blood of modern industrial activity. In all the processes from raw material to the sale of the finished product, credit is involved. Credit is a necessity of business life to the farmer, the mine operator, the lumber company, the manufacturer, the railroad companies, the public utility corporations, and to governments. Without the use of credit, business organization would be greatly simplified, there would be an enormous decrease in the volume of business done, and the production in anticipation of a future market would largely disappear.

An Illustration.—Perhaps wheat farming in the states of the northwest will furnish us a good example of the pervasiveness of credit. Let us assume that on account of rust the crop is a failure for two seasons in succession. The farmers, let us further assume, have bought agricultural machinery on credit. With a failure of the crop it is impossible for them to do much new buying and many farmers find it quite impossible to pay off their earlier obligations. The salesmen of machinery in these sections discover that business is very poor; where formerly it took them two months to cover their territory they can now do it in two weeks. The houses they represent cancel orders which they have made with the manufacturers; the

manufacturers cancel orders for steel, and run their plants on part-time or shut them down altogether; the workers lose their wages and cannot buy from local retailers; the local retailers, seeing their stock selling slowly, cancel orders from wholesalers, who in turn cancel orders from jobbers and other manufacturers. In all this series, the banks find it difficult to turn loans into money, and they have on their hands much "frozen" credit.

The wheat farmers have borrowed from their local banks in the spring with the expectation of paying off their borrowings in the fall. As there is no crop and hence no profits, the local banks must renew the paper—in other words, carry the load; in order to do this they have to call on other banks for funds. The situation becomes so bad that perhaps extraordinary measures, such as a government loan or a bankers' pool, must be taken in order to finance the crop. Something of this sort actually happened in 1920 in connection with cotton owing to the low price of that commodity. The farmers have also bought land on a mortgage and, being unable to meet the interest as it falls due, a good many are forced to give up their farms altogether, and the property falls into the hands of those holding the mortgages. If these holders are banks, they may find themselves saddled with a non-liquid asset and considerable money tied up in property which has no present value and as a result their power to loan is curtailed.

The railroads of that section are largely wheat-carrying lines. Their income is dependent upon the amount of wheat being shipped. If no wheat is forwarded their income sharply falls off. They therefore find it difficult to pay dividends, and consequently their stock declines rapidly on the stock exchange. This in turn affects other stocks, so that there is perhaps a real collapse in the market with large losses in commissions to brokerage houses, and depreciation losses to dealers in securities. This loss in value of stocks affects bank

collateral, and loans against collateral can be made only on the basis of more liberal margins. Savings banks, insurance companies, and other investors may have to write off large losses.

Then railroads, too, with loss of income and with less power to borrow, must give up extensions and improvements, must cease buying rails and locomotives, and must lay off labor. This in turn hits the business of steel plants, locomotive works, retailers, wholesalers, and manufacturers. The failure of an important crop like wheat will eventually bring far-reaching business results, and all this because the farmers cannot make profits, cannot pay off loans, and cannot continue to borrow.

Loss of a crop, of a market, of traffic, and of employment undermines the foundation on which credit rests, namely, the possibility of future payment. There is here a loss of values, and with it either the power to pay back former loans or to create new ones is lacking. The springs of credit are in the expectation and reasonable assurance of meeting the deferred payment items as they fall due. Certainly there is opportunity for renewal in many cases and there is much financial jugglery in temporarily carrying the load; but in the end resort must be made to actual values and these exist only in proportion as crops are marketed, goods are sold, and men are employed. Credit, then, is sensitive to the state of business, while the latter cannot be operated extensively without credit.

CHAPTER XX

BANKING IN THE INDUSTRIAL ORDER

The Origin of Banking.—Banking did not and probably could not originate in a purely agricultural community. As soon, however, as trading and commercial relations were established, then the need for banking instruments and of banking as a specialized function was appreciated.

Among the Jews in Palestine, metallic money was used and money-changers were common. Many foreigners came to Jerusalem for the Jewish festivals, and at such times money-changing was important. It will be remembered that on one notable occasion Jesus made a whip of small cords and drove the money-changers out of the temple, overturning their tables, and saying "My Father's house is a place of prayer, and ye have made it a den of thieves."

Among the Greeks, temples were used as a place of safe deposit for funds and property, but inasmuch as the temple priests did not pay interest, private individuals carried on a flourishing business as tax receivers and into such houses the state or men of wealth caused their revenues to be paid and then settled their accounts with creditors by drawing a check or draft upon these funds.

The word "bank" is probably derived from the Italian "banco" which means bench and refers to the benches on which money-changers were accustomed to keep their strong boxes or chests of money. In the Middle Ages, money-changing became an important function. Worn, clipped, and otherwise mutilated coins of various mintages were in circulation, and in order to meet the needs of trade at various centers, it was necessary to have some person who could appraise the value of

these coins and give full weight gold or silver in exchange. Also with the development of fairs and markets, money-changing became increasingly significant.

For the most part Jews and Lombards—Italian merchants—pre-empted this business. They were feared, hated, and called extortioners because they exacted heavy premiums on exchange and excessive interest rates—usury—where money was loaned. Wealthy merchant families like the Fugger family of South Germany, the Penruzzi family, and the Medici family of Florence, with their trade connections well established throughout Europe, soon added to their purely merchandising function that of finance.

Governments, too, entered the banking field, and in 1157 the bank of Venice was founded, in 1609 the bank of Amsterdam, and in 1619 the bank of Hamburg. The bank of Amsterdam was particularly active in exchanging new coins, fresh from the mint, of a standard weight and fineness, for coins deficient in weight which were then in circulation. These new coins were known as "bank money," and in order to avoid speculation were sold at a definite rate of 5% premium and bought back again at 4%.

In time, the law required that all foreign bills of exchange should be paid in "bank money." It is interesting to note that the bank of Amsterdam was the model on which were formed most of the European banks in existence.

Early English Banking.—In England, as in many other countries, goldsmiths—expert craftsmen in the precious metal—took over to a considerable extent this private banking business. They bought and sold gold and silver bullion, and cunningly fashioned plate and ornaments for wealthy families. They must needs keep a stock of precious metals on hand, and to avoid the risk of theft or fire had special facilities for safety. Merchants, traders, and wealthy people deposited funds with the goldsmiths on open-book account.

Venetian and London traders were passing back and forth between the two centers. Since the Venetians were buying goods in London and the Londoners in Venice, payments had to be made in both directions. Since the transportation of precious metals was exceedingly risky, the custom developed for goldsmiths to give the London traders a receipt for gold or silver deposited with them. The trader then proceeded to Venice, presented his receipt to the goldsmith at that place, received the gold and with it bought his goods.

These receipts became so convenient that they soon circulated from hand to hand by indorsements. Thus a demand receipt for the precious metals took on a money function. Still another banking function was added when the goldsmiths discovered that considerable sums of gold and silver were being left with them for periods of time. By keeping a reserve in metal, they found it possible to loan at interest the balance of the bullion or coin deposited.

Bank Functions.—The modern commercial bank is a great credit-making institution. It takes existing tangible values, such as finished goods which have been sold, or prospective values, such as future earnings of the cattle raisers, farmers, corporations, and others, and converts them, through credit, into immediately usable form. It mobilizes funds, creates credit, and devises instruments which greatly facilitate exchanges.

A bank performs four important functions: (1) it receives deposits for safekeeping; (2) it loans on credit, and discounts the paper of business men; (3) it issues its own demand promises to pay; (4) it invests in bonds, and sometimes acts as an agency through which the purchase and sale of securities may be made. A bank not only collects funds from various sources and then lends them out, thus acting as a go-between or distributor, but it also actually creates new credit facilities. The work of mobilizing funds is important, but still more so is the

power and the machinery by which a bank creates loanable resources.

Deposits.—The deposits of a bank are in the form of cash, checks, bond coupons, matured bills, and other cash items. But far transcending these forms of deposit are those created through borrowing. Looking at the statement of any commercial bank it will be discovered that the item "loans and discounts" bears a very close and intimate relation to the item "deposits." In the statement of five important banks of New York City for the week ending November 26, 1921, we find the following correspondence between the two items:

Bank	Loans, Discounts, and Investments	Net Demand Deposits
Hanover National Bank.....	\$107,633,000	\$ 94,458,000
National Bank of Commerce.....	303,202,000	264,341,000
National Park Bank.....	159,377,000	128,369,000
Bankers' Trust Company.....	244,228,000	234,668,000
Chase National Bank.....	303,250,000	282,984,000

Deposits are obtained from various sources and on the part of banks there is keen competition for them as well as other kinds of banking business. The depositor may be an individual, a partnership, a corporation, a philanthropic or religious organization, a school or college, an insurance company, another bank, or a governmental agency or department.

The depositor fills out at the bank a slip which classifies the items deposited under the heads "bills," "specie," "checks." This slip is turned over to the bookkeeper and the total amount deposited is credited to the account of the customer. At weekly or monthly intervals the bank renders a statement to the customer which itemizes by date all deposits and withdrawals and strikes the balance. Deposits are of two kinds—"demand" and "time." Demand deposits are all those that are payable within thirty days. Time deposits are those payable after thirty days; that is, a bank may require thirty days' notice before paying them. This is true for all deposits of savings banks after a period of ninety days, and it also applies

to the time deposits of national or state banks and trust companies.

Loans and Discounts.—The handling of discounts and investments constitutes a very extensive part of the work of a commercial bank. By “loan” is meant that a client presents his promissory note to the bank and in return receives a credit to the full face value of the note. When the note matures the amount is paid plus interest at the going rate for the period of the loan.

Suppose, for example, that John Smith delivers to his bank a sixty-day promissory note for \$5,000. If the loan is approved by the bank, he receives \$5,000 in cash or has deposited to his account at the bank \$5,000. When the note matures John Smith pays the bank \$5,000 plus the interest for sixty days at 6%, or \$5,050. The interest is usually paid at the maturity of the note.

In the case of a discount the interest is deducted at the time the loan is made. If John Smith has this same promissory note discounted, he receives in cash or has deposited to his account, not \$5,000, but \$5,000 less the interest for two months, which is \$4,950. As a general rule discounts are made for manufacturers, traders, and others on paper which represents an actual commercial transaction; that is, the borrowing represents definite goods which are actually in the process of purchase or sale.

On the other hand, a loan may be made on paper without representing any such transaction. A person gets a loan for the purpose of buying and selling stock on the stock exchange, to finance the production period of crops or manufactures, or for the purpose of stocking a store. A country bank loans to farmers, merchants, and individuals on six months' time, whereas a city bank or large-town bank, especially if manufacturing and wholesaling is carried on, will discount as well as loan against collateral or the borrower's financial statement.

Call Loans.—Loans and discounts, like deposits, may be either “demand loans”—often known as “call loans”—or “time loans.” In the case of demand loans which are largely made against stock exchange collateral, the lender may call for the repayment of the loan on a twenty-four hour notice. In this case the borrower must obtain another loan elsewhere or sell off securities and obtain funds to pay the debt. If the lender defaults, then the bank has the irrevocable right to sell the collateral, using the proceeds to pay the bank together with any expenses incurred. If anything is left from the sale of collateral it goes to the borrower or to his estate.

These call loans once were a favorite form of investment for surplus funds of banks, and were considered as a secondary reserve, which meant that the bank by the sale of these securities could raise funds to meet demands for cash. Today, some of the surplus funds are being directed to the bank acceptance which is considered a better form of investment, in that it is more easily and certainly liquidated.

Time Loans.—Time loans are those which run from fifteen days to six months. The security back of them may be special, or general. Special security is some definite form of collateral, as stocks and bonds, whereas general security is merely the total resources of the maker or the indorsers. Loans based on general security are classified as “single-name” or “double-name” paper, and so on according to the number of names which appear as indorsements. Where stocks and bonds are put up as collateral, the loan is known as a “collateral loan.” The bank requires a margin of 10% or 20% or even more, that is, it will loan only to a certain per cent of the value of the securities presented. At any time the bank may call for additional security. The customer also has the right, subject to the approval of his bank, to substitute other stocks or bonds for the ones originally deposited. In case the borrower defaults in the payment of interest, or of the principal at

maturity, the bank has the power to sell the securities and pay off the debt to itself with all the costs involved.

Bank Notes.—A bank note is a demand promise to pay issued by a bank and bearing the signature of the president and the cashier of the institution. In the case of federal reserve notes, the signatures are made by the Secretary of the Treasury and the Treasurer of the United States, for the reason that these notes are direct obligations of the government.

Bank notes are paid out over the counter of the bank issuing them and circulate from hand to hand like any other form of money. They are issued in denominations of \$5 to \$100. The issuing bank must redeem them over its own counter in any form of lawful money. They may also be redeemed on presentation in certain amounts out of a 5% gold fund which each issuing bank keeps in Washington for this purpose. These notes tend to economize the use of gold or its substitutes, inasmuch as gold can be used much more efficiently as reserve than in general circulation. Furthermore, notes are more convenient than gold and serve all the purposes of gold for general circulation as long as they are promptly redeemed by the banks whenever they are so presented.

Bank Investments.—A bank may invest by buying short-term paper, such as drafts, bills of exchange, acceptances, municipal warrants, and treasury certificates of indebtedness, or it may buy long-term bonds and notes of governments and corporations. The buying of short-term paper is a regular part of the business of a commercial bank. At times the market for the buying and selling of such paper is very active and the transactions run into large figures. At other times comparatively little buying of this sort exists. Such buying is conditioned on the amount of surplus funds readily available.

Banks also invest a considerable part of their capital and surplus in bonds. Since the capital and surplus of the bank

is looked upon as one of the important safeguards and guaranties for paying its creditors in case a bank fails, it is invested in high grade bonds which have a market value that fluctuates only within narrow limits. There is a popular assumption that the safety of a bank is measured by the size of its capital and accumulated surplus. Such an assumption may be entirely erroneous if it fails to take into account the character of the management. A steady reputation for conservative and socially serviceable management is likely to prove a more effective safeguard than the millions of capital and surplus which a bank carries on its books.

Banks through affiliated corporations perform another and quite different service from the investment point of view. They act as agents in the buying and selling of securities for customers; they may loan some part or all of their funds to corporations, to real estate dealers, or farmers, through the purchase of securities or the holding of a mortgage on property; and they may participate in the underwriting of securities for a corporation.

In the latter case the general practice is for the underwriter either to guarantee to purchase at a certain price all securities remaining unsold after a given date, or else to purchase them outright with the expectation of marketing them at a price higher than the purchase price. Banks whose main business is that of marketing securities or floating government loans, are called investment banks.

Classification of Banks.—From the standpoint of function, our banks are not highly specialized. In the case of big city banks and trust companies we find practically all the different kinds of banking mentioned above performed, and in addition many obligations of trust; such as acting as administrator of estates, caring for the funds of individuals and institutions, holding mortgages to property which is pledged for debt, and other similar services.

Banks may be classified according to function—the business they do—or according to the method of control. In the first case banks are distinguished as “commercial” or “investment” banks, as already described. On the basis of the second general scheme of classification which lays the emphasis upon the method of public control, there appears to be quite a variety of banks.

1. Federal Banks:

Federal reserve banks (12).

National banks (9,803).

Postal savings banks.

Federal farm loan banks (12).

2. State Banks:

Banks of deposit and discount.

Trust companies.

Savings banks.

Land mortgage banks.

Co-operative credit associations.

3. Private Banks.

Federal and State Banks.—The federal banks are all incorporated under special acts passed by Congress which have to do with their organization, supervision, and functions. In a similar manner state banks are organized and controlled by special acts of the several states. Private banks are in some states subject to a limited amount of supervision by the state. These banks, however, are not incorporated, but are partnerships, individual enterprises, or voluntary associations, and are regulated principally by the common law. In New York State, as a result of the disastrous Siegel failure, the smaller private banks and bankers are carefully regulated.

State banks, or “banks of deposit and discount,” have capital stock, shareholders, and a board of directors; these receive deposits from manufacturers, traders, and the professional classes; they make loans and invest in short-dated paper; and they carry savings accounts.

Trust Companies.—Trust companies have all these characteristics and besides perform as trustees certain fiduciary obligations, such as the administration of estates, care of trust funds, holding the mortgages of corporations which are the security for bond issues, and other similar functions. It is from these obligations of trust that they get their name, because at one time they did nothing but this specialized business. Since 1896, however, they have rapidly developed other types of banking business and now perform practically all kinds of banking service save that of issuing bank notes. For both state banks and trust companies the issuance of notes is made impossible by a federal tax of 10% levied on all notes of banks other than national banks and federal reserve banks.

Savings Banks.—Savings banks are of two main classes. The first, *stock* savings banks, have capital stock, shareholders, and a board of directors. Such banks are found in the west. The second variety, *trustee* savings banks, have no capital stock, hence no shareholders, and are managed by a self-perpetuating board of trustees. Some of these latter banks, as is the case in New York State, must build up guarantee funds. Savings banks receive deposits largely from working people, in small amounts, and pay interest at a rate of about 4%. They require a thirty-day notice of withdrawal. The accumulated savings are invested in real estate mortgages to an amount not exceeding 60% of the unencumbered value of the property, in government bonds, in high grade railroad bonds, and in New York State a portion of their funds—not to exceed 15%—in commercial paper.

Land Mortgage Banks.—Land mortgage banks specialize, as the name implies, in mortgages on real estate either urban or rural. Their principal work is that of taking mortgages from local associations and issuing against these their own bonds which are sold. The funds thus acquired are loaned to

farmers and real estate dealers under a plan called "amortization." By this plan a farmer, say, pays from year to year interest on the loan and a high enough percentage in addition to liquidate the principal of the loan at the expiration of a given number of years. For example, the total amount paid might be 8%; of which 6% would represent interest and 2% would represent a sum which compounded annually would equal the full principal at the expiration of forty years.

Co-operative Credit Associations.—Laws authorizing co-operative credit associations have been passed in New York, Massachusetts, Illinois, and several other states. These associations are a union of a number of individuals in a local community who either take out capital stock in the enterprise or deposit funds with the association. Loans are made to the members on the basis of personal security. The loan is the joint obligation of all the members, but each member of the group as well assumes personal liability for its payment. The security for these loans is fundamentally the character of the individual borrower. He is known to his associates and for this reason the loan carries less risk. Interest rates on this class of loans are very low, in fact lower than on any other type of borrowing.

Loans are made both for production and consumption purposes, but in the main are designed to furnish working capital to the members. The income derived pays running expenses and a rate of interest on deposits. The association is organized on the democratic principle of "one-man, one-vote," and its shares often have as low a par value as five dollars. Its funds come from the sale of shares, unpaid dividends credited thereon, and the deposits of members. The funds are used for the purpose of making loans to members, the loans having, in general, a duration not exceeding one year, and the evidence of the loan being a promissory note of the borrower with one or more indorsements.

Clearing of Checks.—In most of the large cities of the United States there are clearing houses, which are voluntary associations of banks for the purpose of clearing demand and matured items of the various members. In a large city many banks every day hold items drawn on the other banks. To economize both money and time, the clearing house was devised. The New York Clearing House, which is the largest one in the world, has 60 members including the Federal Reserve Bank of New York. Besides the regular members, a considerable number of other banks clear through the member banks. These latter are called non-member banks.

The clearing house has the regular officers, a number of important standing committees, and a special officer designated as the "manager of the clearing house." The manager presides at the daily clearing meetings of the banks and his office is considered one of importance and of real responsibility.

At present there are 141 clearing houses in the United States which cleared in the year 1920, items aggregating in money value the enormous sum of \$451,103,000,000. Of this amount the share of the New York Clearing House was \$244,135,000,000, and the ratio of balances to clearing was about 4.6%, or \$10,985,000,000. At the New York Clearing House the volume of items cleared during the single week beginning November 19, 1921, was \$4,310,000,000, which was slightly over 55% of the total clearings in the 141 clearing houses of the United States. The total for the whole country during this same week was \$7,782,000,000. Taking any week of the year, the New York Clearing House clears a larger volume of items than all the other clearing houses combined. New York City is the financial center of this country, and hence the volume of business done, involving the use of checks drawn upon members of the clearing house, is extremely large.

Illustration of Clearing Transaction.—The principles upon which clearing is based are very simple although the

actual working details are involved. To simplify the operation, let us take merely two banks which are members of the New York Clearing House. During a certain day the National City Bank receives from various sources demand items drawn against the National Bank of Commerce amounting to \$5,000,000, and the National Bank of Commerce receives items drawn against the National City Bank which amount to \$4,500,000. All of these items, properly listed, are enclosed in an envelope and taken to the clearing house at ten o'clock the next day and a balance will be struck between the credit items and the debit items for the two banks. In this illustration the National Bank of Commerce will owe to the National City Bank \$500,000. The claims of the two banks upon each other, amounting to \$9,500,000, can thus be settled by the National Bank of Commerce paying \$500,000 to the National City Bank.

Money is still further economized by the single device of settling balances by checks drawn on federal reserve banks. The National Bank of Commerce presents a certificate for \$500,000 to the clearing house and the amount is credited on the books of the clearing house to the account of the National City Bank and debited to the account of the National Bank of Commerce. The whole transaction involving \$9,500,000 is satisfactorily adjusted by a book entry and without the use of a dollar of actual money.

This system of "offset," as it is called, saves time and money, and greatly facilitates the collection and payment of items drawn upon members of the clearing house and also other banks which clear through members. The \$4,500,000 of items drawn upon the National City Bank are taken back to that bank by a messenger and after being properly assorted are charged off to the various accounts of the banks.

Out-of-Town Checks.—Out-of-town checks are handled by the transit department. Before the development of the

check collection plan of the federal reserve system, the collection of these items involved a great deal of expense and also time.

Three main difficulties were found under the old system: (1) the roundabout routing of checks; (2) heavy exchange charges, amounting often to 10 cents or more per item; (3) a large volume of checks constantly in transit in the mails—technically called “the float.” Large banks had correspondents in many different places with whom they kept running accounts. Instead of sending checks directly to the center nearest the place where the bank on which a check was drawn was located, it often happened that such a check would be sent to any center in which the sending bank desired to build up a credit. Checks would often travel around in a most bewildering way. Every journey of the check involved book entries, writing of letters, and postage charges, besides delaying the prompt presentation of the check for payment. In every state there was a clearing center, such as the city of Albany in New York, to which eventually checks drawn on banks in New York State were sent for collection.

Exchange Charges.—Exchange charges were made by banks ostensibly to cover the costs of collecting checks and the interest on money during the time the checks were in process of collection. For instance, the New York Clearing House charge amounted to $4\frac{1}{2}\%$ for the number of days the banks were deprived of their funds. The exchange charge is in reality a service charge, and results in a depreciation of the face value of the checks by the amount of the charge. If the check was drawn for \$50, its value when credited to the account of the depositor, assuming a charge of 10 cents, was \$49.90. In this way some banks made a considerable profit. The exchange charge is still a bone of contention, and many banks, on the plea of profits, vigorously oppose the par check collection plan of the federal reserve system.

The Float.—The “float,” as noted above, consisted of the checks which were in the mails and were in the process of collection. This float amounted to many millions of dollars a week. It was the practice of the banks to credit the amount of the checks as soon as they were sent out. The checks in the mails were treated just as though they were collected and were cash. It is quite evident that a check is nothing but a written order, a claim upon a bank for payment. Obviously it is poor banking practice to treat a claim as if it were actual cash, that is, actually presented and paid or liquidated. It might happen that a considerable number of these checks would be turned back because there were not sufficient funds on deposit with which to make payment.

Par Collection.—Since 1916 the federal reserve system has been attempting to collect all checks drawn upon banks in this country at par. Check forms of member banks now bear on their face the words “collectible at par through the Federal Reserve Bank of Boston” (or New York, or Chicago, etc.). The system of par collection has grown to such an extent that in its issue of November, 1921, the Federal Reserve Bulletin reported 28,191 banks out of a total of 30,391 as on the par list. Under the new system the twelve federal reserve banks act as clearing centers for their districts.

A check drawn on the First National Bank of Rockford, Illinois, and deposited in the Dartmouth National Bank of Hanover, New Hampshire, would after proper indorsement be sent to the Federal Reserve Bank of Boston. The Federal Reserve Bank of Boston, seeing that the check is drawn on an Illinois bank, will send it directly to the Federal Reserve Bank of Chicago for collection. The Chicago Federal Reserve Bank will debit it to the account of the First National Bank of Rockford and will send it forward to that bank where it will be debited to the account of the drawer. After a lapse of say four days, the time involved in presenting the check for final

payment, the amount of the check will be credited to the account of the Dartmouth National Bank by the Federal Reserve Bank of Boston.

The Federal Reserve Bank of Boston has a credit claim against the Chicago Federal Reserve Bank which is settled through a gold settlement fund held by the Federal Reserve Board in Washington. This fund on November 26, 1921, amounted to \$425,833,000. Every day each federal reserve bank telegraphs the Federal Reserve Board in Washington the amount of its claims on each of the other federal reserve banks. The officials in Washington by book entries "set off" these claims through the process of debiting and crediting.

CHAPTER XXI

THE BANKING SYSTEM OF THE UNITED STATES

Banking System of the United States.—The basis of banking in this country has been the democratic one of freedom. In the main, initiative in banking has been encouraged both by state and national law. Competition has been keen and in order to meet it banks have been on the alert to increase their service to the public.

As a result the United States has a large number of banks each of which according to its location performs a variety of services for its community. There is no such specialized banking service in the United States as is to be found in some of the states of Europe. The functions performed by the various types of banks, in considerable measure, overlap. Until within the last eight years, there was very little centralization in banking, if we except the two United States banks of the first quarter of the last century, and the preponderant influence of some big city banks. In the main, banks were independent and in close rivalry with each other.

One of the great defects of the past was the almost utter lack of any co-operation in times of crises. When such system or lack of system as we had was tested out, it was found that most banks made every possible effort to strengthen their own reserves even at the expense of other banks. In the panics of 1893 and 1907 there was a wild scramble for gold with the result that city banks were forced to call in loans and money rates on the stock exchange were forced up to unprecedented heights. At one time in 1907 money was loaned on in New York Stock Exchange at a rate of 125% per annum.

In some instances there was local co-operation through the clearing house, but taking the country as a whole the periods of crises demonstrated an alarming weakness. With the introduction of the federal reserve system a large measure of co-operation has been achieved.

State Regulation.—Until 1863, banks were regulated by a number of methods created by the various states. Banks at this time were mainly note-issuing institutions and an attempt was made to prevent losses on these notes in case of the failure of the issuing bank. Secretary Chase of Lincoln's cabinet was instrumental in advocating a national system, and in 1863, according to his plan, a national bank act was passed. The chief reasons for the advocacy of such a measure were to furnish a market for United States bonds and to create a uniform note issue for the whole country. The act was much more successful in accomplishing the second project than the first, since the number of bonds marketed in this way up to the close of the Civil War was comparatively small.

National Bank Act.—The National Bank Act of 1863 established a series of note-issuing banks, organized under federal law. There are now 9,803 of these banks which are distinguished by the word "national" in the name; e.g., the Dartmouth National Bank. With the passage of time the note issue function of national banks has become relatively less important, and the loan and discount function more important. Under this act there is still a large amount of freedom in banking, for any five reputable persons may organize a bank in a community, provided they get the authorization of the Comptroller of Currency at Washington and comply with the organization requirements of the law. Four of the most important parts of the act are those relating to capital and surplus, note issue, reserve, and protection of customers.

Minimum capital requirements are graded according to the

population in the town or city where the bank is located. In towns and villages having less than 3,000 population the capital must be at least \$25,000; where the population is from 3,000 to 6,000, \$50,000; where the population is from 6,000 to 50,000, \$100,000; and where the city has more than 50,000 population the capital must be at least \$200,000. Every bank is required to lay aside 10% of its net profits each year until the accumulated sum is 20% of the paid-in capital. This constitutes the minimum surplus of the bank.

It was formerly required that every national bank should invest a certain proportion of its capital in United States bonds against which it could issue its own notes. Since the passage of the Federal Reserve Act this requirement has been made optional. In 1919, out of 265 new national banks organized, only 68 purchased United States bonds for circulation purposes.

In case the bank elects to purchase bonds, it goes into the open market and buys them at the best price obtainable; it sends these to the Comptroller of the Currency and they are exchanged for registered bonds of the same series. The bonds are then put in the vault of the Treasury Department, and stand as security against notes. The Comptroller sends to the bank blank notes in amount equal to the market value of the bonds, but not exceeding the par value. Against these notes in actual circulation the banks must keep with the Treasury a 5% gold fund out of which the notes of this particular bank coming to Washington may be redeemed.

Present Reserve Requirements.—The reserve requirements of national banks have been significantly amended by the federal reserve law. At present Central Reserve city banks (New York, Philadelphia, Chicago) must have a reserve of 13% against demand deposits, and 3% against time deposits; all banks in reserve cities (there are some sixty such cities) must have a reserve of 10% against demand deposits and 3%

against time deposits; and banks in all other places must have 7% against demand deposits and 3% against time deposits. The law further specifies that these reserves shall all be carried with the federal reserve bank of the district in which the bank is located.

Customers are protected first of all by the double liability of bank shareholders. In case of the failure of a national bank, each shareholder may be called upon to furnish a sum of money equal to his investment. If he owns \$1,000 of bank stock he may have to pay in an additional \$1,000 to satisfy the claims of creditors.

Each national bank is required to make reports of its condition to the Comptroller five times a year; and these reports may be called for at such times as the Comptroller desires. Furthermore, the national bank is subject to examinations by bank examiners under the supervision of the Comptroller.

As an additional protection, the law prohibits a bank from becoming indebted to any single individual, firm, or corporation to an amount in excess of 10% of its unimpaired capital stock and surplus. For example, if a bank has capital stock of \$100,000, it could presumably loan not over \$10,000 to any single individual or firm. The word "debt," however, does not refer to bills of exchange drawn against actual existing values or the discount of commercial paper owned by the person applying for the discount. Therefore, if these two types of paper were the basis of the loan, the amount would not be restricted to \$10,000.

Need for Improvement in Banking Prior to 1913.—The growth which took place during the years from 1880 to 1900 in the size of business units, in population, and in volume of business done, emphasized the need for some radical overhauling of our whole monetary and banking system. Much of the financial legislation since the passage of the National Bank Act had been in one form or another currency legislation.

The need for still further changes in our currency was fairly apparent, but it was not yet so clear that changes were necessary in our whole banking system.

As early as 1898, the Indianapolis Monetary Commission suggested a comprehensive scheme of currency reform which would provide the country with an emergency circulation. Their plan, however, was not adopted.

In the years immediately following there was considerable discussion of changes by the American Bankers Association, chambers of commerce, and other public bodies. It took the panic of 1907, however, to arouse the country to the weaknesses of our whole system. The Aldrich-Vreeland Emergency Currency Act was hastily passed in 1908. Tacked to this bill as a rider was a provision authorizing the appointment of a National Monetary Commission whose duty it should be to study the banking system in its entirety and to draft some remedial legislation.

This commission reported in 1910. The actual plan proposed by the commission was not accepted, but many of the features of their plan were incorporated in the new legislation of 1913 that inaugurated the Federal Reserve Act.

Defects of National System.—The old system had four fundamental defects: (1) decentralization, (2) inelasticity of credit, (3) cumbersome exchange and transfer system, (4) defective organization as regards relationship with the federal treasury. Decentralization appeared in the large number of actively competing banks which were locally owned and also for the most part did a local business. There was no central reservoir for funds, except possibly in the case of one or two of the large cities, and this was entirely inadequate to meet the need. In times of crisis there was a scramble for cash, and each bank made every effort to protect itself. For this reason much hoarding of reserves went on.

Credit was notably inelastic; that is, it did not expand and

contract according to trade demands. Note issues were, if anything, perversely elastic, expanding where they should contract, and vice versa. Just when loans and discounts should have been freely extended, there was a tendency to build up reserves by canceling loans or by failure to expand them. This worked a hardship on the business interests which depended on the banks for working capital. Especially in times of crises, when the situation called for a generous extension of credit to legitimate business, loans were quite likely to be refused.

The whole system of exchange and transfer was awkward. There was an overabundance of funds at one point and a great scarcity at another. Rates on exactly the same type of paper would vary from one place to another by as wide a differential as 6% or 8%. It was very expensive also to get funds from one section of the country to another. As for check collection, that as we have shown was marked by circuitous courses, delay, and high cost.

The relations of banks with the Treasury Department were those developed in 1846 and known as the Independent Treasury system. Besides the central treasury, there were nine sub-treasuries, and a large number of banks which were designated as regular depositories. There was little correspondence between the times when funds were received through taxes, internal revenue receipts and customs duties, and the time of expenditure. A large amount of money would be suddenly taken out of circulation through the payment of taxes which was quite likely to bring pressure on the banks and cause an acute stringency in the money market. This system also led to a continual hoarding of money by the government which resulted in keeping funds away from their legitimate uses. Furthermore, it caused some banks to rely entirely too much on government assistance in case they were in difficulties. Some banks looked upon the Treasury as a sort of kindly indulgent grandfather who would help them out by the deposit of government funds in case they had unwisely extended loans.

The Federal Reserve System.—To meet these defects, the Federal Reserve Act was passed and went into operation in November, 1914. The main features of the system may be explained under the two heads: (1) organization, and (2) operation. The chief features of organization are: (1) the Federal Reserve Board, (2) the federal reserve banks, (3) the member banks, and (4) the Federal Advisory Council.

The Federal Reserve Board is composed of seven members who serve for ten years and receive a salary of \$12,000 each per year. The Secretary of the Treasury and the Comptroller of the Currency are members ex-officio, and five members are appointed by the President with the advice and consent of the Senate. At least two of the appointive members must be persons experienced in banking and finance.

The board is invested with important and far-reaching power. It may examine at its discretion the accounts, books, and affairs of each federal reserve bank and of each member bank; it may require such statements and reports from each bank as it shall deem necessary; it may permit or require one federal reserve bank to rediscount the discounted paper of other federal reserve banks; it may suspend for an initial period of thirty days and from time to time renew such suspension for periods of fifteen days any reserve requirements of the act; it regulates and supervises the issue and retirement of federal reserve notes; it may suspend and remove any officer or director of any federal reserve bank; it may suspend, for the violations of any provisions of the act, the operations of any federal reserve bank; and it exercises general supervision over the federal reserve banks.

Federal Reserve Districts, City, and Bank.—The country has been divided into twelve districts. In each district a city has been designated as a federal reserve city, and in each of these cities there has been organized a federal reserve bank. The capital of each of these banks may not be less than

\$4,000,000. Each member bank is compelled to subscribe to the capital stock of the federal reserve bank of its district a sum equal to 6% of its total paid-up capital and surplus. One-half of this must be paid in when a bank becomes a member and the remaining one-half is subject to call by the Board. The combined capital of the twelve federal reserve banks on November 3, 1921, was \$103,000,000, and the surplus \$213,000,000.

Each district bank is managed by a board of nine directors. The directors are divided into: class "A," three directors representing the banks of the district; class "B," three directors representing agriculture, commerce, or some other industrial pursuit within the district; and class "C," three directors representing the Federal Reserve Board and appointed by the Board. One of the class "C" directors is appointed as chairman of the board and as "federal reserve agent."

Member Banks.—The member banks comprise all national banks, which are compelled to join the system or else forfeit their charter, together with such state banks and trust companies as may care to join. The state banks and trust companies on joining the system must comply with certain important provisions of the National Bank Act. Because state banks were slow in uniting with the system, the law relating to membership was amended in 1917 in such way as to remove some of the most serious objections of the state banks. To mention one in particular, a state bank may withdraw from the system on giving six months' written notice, provided only that no federal reserve bank shall cancel without authorization of the Federal Reserve Board more than 25% of its capital stock in any calendar year. On October 31, 1921, there were 8,117 national banks and 1,526 state banking institutions members of the system.

The Federal Advisory Council consists of twelve men, one appointed from each federal reserve district. The work of

this council is that of advice and recommendation. It confers with the Federal Reserve Board on general business conditions, and may make recommendations in regard to discount rates, note issues, reserve conditions, rediscount business, and the general affairs of the reserve banking system. This council sits four times a year in Washington and may be called together oftener by the Federal Reserve Board. It may also meet at other times and at such place as it may deem advisable.

Functions of Federal Reserve Banks.—It will not be necessary at this point to classify all of the functions of the federal reserve banks. A few of the large functions, however, should be described. Federal reserve banks receive deposits, issue notes, buy and sell gold and certain obligations in the open market, hold reserves, engage in the transfer of funds and collection of matured items, and act as fiscal agents for the government.

The federal reserve banks receive deposits from member banks, from the government, and, for purposes of exchange, from non-member banks and trust companies. The relation of member banks or the government to federal reserve banks is that of a customer. In both cases funds and matured items of various kinds are deposited and charged on the books of the reserve bank as a credit to the depositor. Withdrawal of funds by check or otherwise is charged on the books as a debit to the depositor, and the difference between the total credits and total debits at any given time is the balance. In the case of a given member bank, gold, commercial paper, or promissory notes presented would be credited to the account of the presenting bank and the notes issued to it by the federal reserve bank or checks drawn against the account would be debit. In the case of the government, a running book account is kept of all deposits of tax, revenue receipts, or the receipts from short-term notes and bond sales. In like manner the government account is debited for all warrants or checks drawn against it.

The relation of reserve banks to non-member banks and trust companies is not that of principal, but that of agent. The bank acts as an agent in the collection of various matured items and for this purpose must receive deposits from the bank for which it is collecting. The non-member bank is a customer only in respect to one particular service, namely, that of collection. During the war, in order to facilitate bond sales other relations with non-member banks were undertaken, but these were temporary expedients.

Federal Reserve Notes.—The note issues of the federal reserve banks are of two kinds: (1) federal reserve notes, and (2) federal reserve bank notes. The federal reserve notes are issued under the authority of the Federal Reserve Board.

The notes are first issued to the federal reserve agent, who must render a strict accounting each day to the Board of all notes issued, notes returned, and the amount and character of the collateral back of these notes.

In case any member bank requires notes, it may offset the notes against gold or commercial paper it has deposited with the reserve bank. This gold or commercial paper, or both, will be transferred to the federal reserve agent in an amount equivalent to the face value of the notes issued. Notes may be retired or redeemed by the member bank sending them, or by presenting gold, gold certificates, or lawful money to the federal reserve bank, which in turn presents them to the federal reserve agent who then releases the collateral in an amount equivalent to the face value of the notes presented.

The commercial paper which may be presented as collateral is that eligible for rediscount by the federal reserve banks. It consists of notes, drafts, and bills of exchange having not more than thirty days to run, indorsed by a member bank, and arising out of agricultural, commercial, or industrial transactions involving an actual sale or purchase of goods, or the proceeds of which are to be used for such sale or purchase.

The law specifically debars notes secured by stock or bond collateral with the exception of notes secured by United States government certificates of indebtedness and bonds. It also includes certain types of bankers' and trade acceptances and other paper purchased in the open market.

Federal Reserve Bank Notes.—Federal reserve bank notes are issued to reserve banks on the presentation of United States bonds as security. These notes are exactly like national bank notes with the exception that they bear the name and are issued by federal reserve banks. The law provides for a limited purchase by federal reserve banks of the United States, bonds held for circulation purposes by national banks, and permits either an issue of notes against them or a conversion of the bonds into 3% obligations of the government not bearing the circulation privilege

Dealings in Open Market by Reserve Banks.—In order to provide an outlet for funds of federal reserve banks when rediscounting is light, and also in order to give the federal reserve banks a chance to make their discount rates effective, the law allows them to purchase and sell certain classes of paper in the open market.

The open market consists of banking concerns and individual traders who stand ready, for a consideration, to buy or sell commercial paper, acceptances, municipal warrants, and other forms of standard obligations. Rates at which the various types of paper can be bought and sold are regularly quoted.

The New York Federal Reserve Bank was carrying in its portfolio on November 30, 1921, \$23,887,000 worth of bills bought in the open market, and on the same date all the federal reserve banks held a total of \$72,954,000 of such bills.

The matter of making the bank rate effective is important. If the New York Federal Reserve Bank, under authorization from the Federal Reserve Board, should raise its rate of dis-

count and the open market rate should be lower than this new rate of the New York bank, it is quite evident that New York banks would continue borrowing in the open market.

In order, therefore, to force the market rate up, the federal reserve bank would sell notes, drafts, and commercial paper it held in the market and by this selling raise the rate to the same level or above the level of the discount rate quoted by the bank. The bank rate, then, being the same or lower than the market rate, member banks would begin rediscounting their paper with the reserve bank.

By these sales of paper in the open market the reserve bank would get hold of the surplus funds and thus, by lessening the amount of loanable funds in the open market, would force the rates up.

Federal reserve banks are required by law to have 40% gold against notes in actual circulation, and 35% in gold or lawful money against its net demand deposits. In order to provide some elasticity and not make this reserve requirement a "dead line" or irreducible minimum, the act provides that where sanctioned by the Federal Reserve Board these reserve requirements may be temporarily waived, provided that a graduated tax is levied on the amount by which the reserve falls below 35%. This tax is paid by the federal reserve bank, but in actual practice it is paid by the customer inasmuch as the tax is added to the discount rate. Loans would therefore become increasingly expensive. The reserve of member banks is the balance which they have at the federal reserve bank; that is, the difference between the debit items charged to the account of any member bank and the credit items to be charged is the balance at any given time.

Gold Settlement Fund.—The method by which checks and matured items are collected has been already explained in Chapter XX. Mention has been made, also, of the gold settlement fund, which is very useful in connection with the transfer of

gold from one section of the country to another. If, for example, the San Francisco Federal Reserve Bank had rediscounted or bought paper from the Federal Reserve Bank of New York amounting to 5 million dollars, the San Francisco bank, instead of sending gold to New York, could settle the whole transaction satisfactorily through the gold settlement fund without the actual transfer of a dollar. On telegraphic advice the officials in charge of the gold settlement fund credit the New York reserve bank with 5 millions and at the same time debit the San Francisco bank with 5 millions. This releases gold to the New York bank which would otherwise perhaps have to be sent to Washington, or it makes available for the New York bank an extra 5 million dollars in the gold settlement fund for possible payment to other banks.

Special Services of Federal Reserve Banks.—As fiscal agents of the government, federal reserve banks perform useful services. The Secretary of the Treasury is given the right by the act to deposit all moneys of the United States, with the exception of trust funds, in the federal reserve banks. The war so developed this practice that there seemed to be no further use for the sub-treasuries, and in 1920 they were closed. Besides acting as general banker for the government, the federal reserve banks performed a large service in distributing the enormous issue of bonds which the war made necessary. The twelve federal reserve banks took over the work of marketing these bonds, as well as investing heavily themselves. They also performed an important service in connection with the treasury certificates of indebtedness which were issued in anticipation of taxes or of long-term bond issues. The amount of this temporary financing was very large, and this load was successfully carried by the reserve banks.

Banks and Organization.—The contribution of banks to industrial organization should by this time be clear. In the

first place, banks furnish through bank notes and checks a very considerable part of the circulating media of the country. It is estimated that in 1913 checks and bank notes settled 480 billion dollars' worth of business, or about 88% of all the business done in that year. Of this, 472 billions were business transactions settled by check. If all bank notes and checks were withdrawn, it can be seen readily that the great volume of business transactions which now go on would be impossible and that the complex organization built up during the past sixty years or more would be destroyed.

Banks also furnish a large part of the working capital to farmers, manufacturers, traders, and others through credits established by their loan and discount operations. Whenever banks cannot or will not loan to customers, many business houses fail and others have to shut down. Business stagnation is often caused quite largely by a failure to obtain customary loans.

Furthermore, business expansion, both legitimate and illegitimate, is conditioned by the attitude of banks relative to the increase of loans.

Finally, banks of all classes, both commercial banks and investment banks, furnish the fixed capital necessary for business. Through the purchase of corporation bonds, banks participate directly in making funds available which may be used to build a steel mill, or a sugar refinery, or to buy land, or to buy machinery. Besides their own purchases, the banks serve as the principal agents for the distribution of securities, and in this way bring together the corporation which wants funds for fixed capital purposes, and the investor who has the funds. Without the aid of banks, much of the extensive flotation of corporate stocks and bonds would be impossible. In this service also, the banks form an important link in the chain of industrial organization. If this link were broken it would fall to pieces.

CHAPTER XXII

FORMS OF BUSINESS ORGANIZATION—SIMPLE UNITS

Introduction.—The value and purpose of organization are demonstrated in every college each fall when interclass fights are compared with interclass football. Class fights are generally poorly organized contests between two mobs, and seldom result in clean-cut accomplishment of a definite purpose. Gridiron battles, on the contrary, are organized struggles between two selected teams. Each member of a team has definite functions to perform, but acts under a centralized authority and within the football law. Consequently a team can cut through organized opposition to attain a predetermined goal.

All organization is an arrangement of parts in a systematic way so that orderly, efficient use, or action is made possible. The goal of business organization is the creation of wealth. Business must be organized before it can be managed, and the skill by which the organization is made to fit the conditions of the business determines the ease or difficulty of management. Organization provides the structure within which management may be practiced as an art.

Since modern business ranges from the simple to the complex organization—which if efficient must fit the business done—and also shows variations from the elementary to the intricate, the key to organization generally is quantity output; if the production of a business is small the organization may be rudimentary, but if production is large then there must be a corresponding development of organization. The simplest

business organization is the proprietorship, while the most involved is the combination of corporations.

Yet the latter evolved from the former, and both deal with the essentials of ownership, control, and distribution of income. In the case of the proprietorship these things are easily comprehended, but in the combination of corporations the three factors are obscured by size.

Individual Proprietorship.—The earliest, most simple form of business organization in the United States was the individual proprietorship. Under it, a single person owned and controlled the business. He took all the risk, he was in every way responsible for the success or failure of the enterprise, and he secured for himself all the profits, or bore all the losses.

Advantages.—The advantage of the proprietorship was primarily due to its lack of formalities. A man could enter almost any business without sanction from authority. To be sure, the carrying of mail was early made a government business, and certain other types of business such as conducting a lottery, operating any branch of business connected with intoxicating liquors, or conducting immoral or anti-social enterprises, have been prohibited by law. Furthermore, a few businesses such as peddling or running a taxi have been made subject to license. But within these limits no person is or has been debarred, for the most part, from trying his skill as a business man in almost any enterprise he may select, and without permission from a single official. The proprietor also may not only enter upon the business of his choice, but he may also conduct it without the direction, assistance, or advice of outsiders if he so wishes. When he is ready to retire, he quits—no fuss, no legal restrictions, no contract obligations stand in his way. He is the captain of his own affairs.

In the second place, a proprietorship is a flexible business organization. It may act quickly in emergencies. The proprietor decides, and may execute his decisions on the spot. If he wishes to keep his business matters secret, no associate can compel him to divulge them; but if he desires to publish broadcast his business concerns, no one can prevent him.

The proprietorship form of organization is admirably adapted to a business that requires only a small amount of capital and incurs but small risks. If, as well, the business operations are not complicated, proprietorship fits readily.

As a result many small farms, retail establishments, factories, mines, wood-cutting, and personal service businesses such as barber shops, are operated under proprietorships.

Disadvantages.—Nevertheless, proprietorship has serious limitations. Its greatest difficulty lies in its inability to secure large amounts of capital. On the strength of his own integrity and individual possessions, a proprietor may borrow, say, as much as \$50,000—although so large a sum would be unusual—but this amount would scarcely buy the paint for an automobile plant, to say nothing of financing a steel business whose initial investment may run as high as 20 million dollars. A proprietor's credit might suffice for a crossroads grocery, but it could not bear the burden of a nation-wide chain of groceries.

Likewise, a proprietorship is unable to cope with a business that requires special judgment and capacity, or one that necessitates a great variety of different abilities. Thus, no one man can set up in the insurance business. Again, the proprietor of a small retail store may buy for all the departments, manage his own bookkeeping and credits, act as a salesman, dress display windows, write advertising, and even personally deliver merchandise. But the larger a retail store becomes, the more of these matters are functionalized under different persons, and the more necessary it is to hire highly trained experts to direct each of these activities.

Furthermore, a proprietorship limits the distribution of risk. A proprietor ordinarily puts all of his resources into one business and consequently all the uncertainties of the enterprise are borne by one man. An investor is unwise to venture his all in one single property; he is safer if he spreads his funds over many unlike sources of wealth. Besides, a business is strengthened if its uncertainties are carried by many instead of one person.

Why So Many Small Proprietorships.—If the proprietorship is adapted mainly to small-scale operations and if modern business tends toward large-scale undertaking, why are there so many proprietorships in existence, and what causes maintain small ventures in such number? For it is true that the small business, generally organized as a proprietorship, outnumbers by a wide margin all other forms combined, in every type of profit-making venture.

The answer, first of all, must take account of the mediocrity of men. Special ability is rare, moderate skilfulness is bountiful. As a result the number of businesses so large and complex as to require direction by men of great gifts is limited to the meager tally of such men, while the great majority of mediocre men find fully satisfying outlet for their talents in small businesses. Few persons could head the United States Steel Corporation, but there are legions who could manage a blacksmith shop.

Many businesses, also, must remain small—hence adapted to proprietorships—because the supply of raw materials or the market is constricted. Thus, scarcity of raw materials hampers the enlargement of factories that curl ostrich plumes, while the narrow market for platinum wedding rings in a like manner prevents their production by enormous, awe-inspiring organizations.

The need for, or the value of, personal contact keeps many other small proprietorships in existence. This explains the

prevalence of proprietorships among chiropodists, as well as the success of proprietor-managed men's-wear shops in the shadow of great department stores.

The impossibility of standardization and hence mechanization of many products is yet another reason why these are made or sold by small-scale proprietorships. Women's hats are made and sold singly by millinery proprietors, whereas men's headgear is manufactured by the thousand from standard forms in machine-equipped plants organized as corporations; it is sold even through chain stores.

The factor of convenience to buyers or users of a service accounts for the presence of small-scale proprietorships as the predominant business organization among neighborhood drug stores, local steam laundries, and ice cream makers or purveyors.

Occasionally a business which has acquired the characteristics of a large-scale enterprise retains the proprietorship form of organization. This was true until recently of the Wanamaker stores in Philadelphia and New York. The inherent unfitness of the proprietorship for large-scale business, however, makes examples of enterprises of this character so organized extremely rare.

The Partnership: Articles.—A partnership is the voluntary association of two or more individuals for the purpose of carrying on a business. The association is signified by an agreement usually put in writing and called the articles of copartnership. These articles set forth the names of the partners, and the designation by which the firm is to be known in public. The investments of each partner, the rights of each, and the division of profits or losses among the partners are also contained in the articles. Generally there is a statement as to the purpose for which the partnership was formed, as well as the methods by which it is proposed to conduct the business, and the manner in which dissolution may be effected.

Types.—Ordinarily partnerships are formed by the association of from two to five persons, although as many as twenty have been known to have been combined in this type of organization. The great firm of J. P. Morgan and Company is a partnership.

In most partnerships, both or all the partners engage actively in the conduct of the business. But some partnerships provide for one managing partner while the other(s) are quiescent; some, too, have more than one active and more than one silent partner. Every possible combination of operative and dormant partners may be discovered in practice.

Partnerships usually are formed to perform a task or to operate a business; but sometimes partnerships are made for a special purpose, such as the promotion or underwriting of a corporation, the purchase or subdivision of property, and the financing or selling of patent rights.

A limited partnership is not unknown, in which one or more of the partners is confined in some way as to his (or their) ownership or control of the business, and consequently as to his participation in profits or losses.

Ownership, Control, and Distribution of Income.—The common form of partnership grants equal rights of ownership to each of the partners. Likewise each has equal rights in the management, and shares equally in profits or losses.

Since each partner is the agent for the other partners, each is liable for any contract or engagement into which the others enter. Thus the partners are jointly and separately responsible for the debts or liabilities of the concern. If the business cannot pay its debts, all the possessions of each and all the partners—whether or not the property has been used by the business—may be seized in order to liquidate the business and free it from encumbrances. Suit, however, cannot be brought against the partnership as such, because it has no legal personality; but each of the partners may be made to appear

before a court to answer to the deeds or commitments of the business.

Advantages.—Like the proprietorship, the partnership has the advantage of ease of initiation; but the partnership has two particular advantages not common to a proprietorship. The partnership can command more capital than the proprietorship, because two or more individuals, if they are in good financial standing, can secure greater credit than one. Secondly, the partnership may obtain greater varieties of talent than is possible for a proprietorship. A proprietor is limited to his own gifts, but partners may supplement each other so that together they are far superior to any one of them alone. A third advantage of the partnership is found in its fitness for businesses that require minute, detailed, personal supervision. It is easily seen that several men together may give closer attention to the small particulars of a business than one man could.

Familiar Uses of Partnership Form of Organization.—Several varieties of business find in the partnership the most desirable form of organization for conducting their affairs. This is true in the professions, for partnerships are common among lawyers, doctors, and dentists. It is also noteworthy as applicable to brokers, certain kinds of bankers, and traders. Businesses that are closely held within a family are often organized as partnerships. Retail establishments of every variety account for a large proportion of the total number of partnerships.

Disadvantages of Partnership.—For the more ambitious sorts of business undertakings, the partnership has manifest disadvantages. Among the foremost is the restriction of capital; for although partnerships command more capital than proprietorships, nevertheless the partnership cannot expand easily

beyond the credit possessed by the individuals who comprise the firm.

In the second place, the full liability of each partner up to the limit of his fortune for the debts of the business prevents men from entering partnerships to conduct hazardous enterprises, or expanding any business much beyond the capabilities of close personal supervision. To risk so much necessitates scrupulous good faith on the part of all the partners. Occasionally in the United States and frequently in the British Empire, the unlimited liability feature is removed by the legal sanction given to partnerships with limited liability. Such forms have one or more silent partners who furnish capital and share in profits but bear losses only to the extent of their capital investment. These firms are generally distinguished by the abbreviation "Ltd." after the firm name.

Furthermore, the life of a partnership is definitely restricted to the natural lives of the men who compose it; if any one of them dies, the business ends automatically. It may be virtually continued by special agreements, but even in such cases the original partnership actually expires, to be replaced by a new one, similar, but original. The surviving partners in the renewed business may be crippled by the withdrawal of the assets of the deceased partner.

Again, on the principle that "too many cooks spoil the broth," a partnership containing, say, ten or twelve partners might be too unwieldy to be efficient. With a group so large there would be likelihood of much working at cross-purposes and loss of energy by the lack of centralized authority. Such a large partnership would probably be inflexible and find difficulty in adjusting to changes in business conditions. "Rule-of-thumb" would overshadow the "rule-of-reason."

The Joint-Stock Association.—Historically the advance in business organization beyond the partnership was exemplified by the joint-stock association. This was a partnership

with some of the features found in the modern corporation.

A joint-stock association divided its capital into shares signified by pieces of printed paper similar to present-day stock certificates. Possession of shares granted a man the rights of a stockholder. These rights included the election of a board of directors, which in turn exercised full authority over the affairs of the association. The amount of shares held by a man indicated his voting power, determined his proportion of income received from the transactions of the association, and set the limit within the association to his liabilities for the losses of the business. Since the shares were negotiable, membership in the association could be changed without necessarily affecting its life or welfare.

The associations were formed by mutual agreement, but were protected by written articles of association, similar to articles of copartnership, filed in a designated governmental office located generally in the county where the association proposed to do business.

Advantages and Disadvantages.—By the form of the association larger amounts of capital could be secured than by an ordinary partnership. The association, too, had continuity of life beyond the lives of its individual members. But an association itself was not a legal entity, and hence its members were individually liable to suit. And notwithstanding that within the association liability for debts or damages was limited to the extent of shares owned—in short, to capital invested—this did not relieve a member from full personal liability if an outside creditor wished to prosecute.

Examples of Joint-Stock Associations.—During the Middle Ages and down to the opening of America, joint-stock associations were popular for large enterprises. In Great Britain the Russia Company was organized in 1553 for trade with Russia; the Morocco Company in 1585 for commerce

with Northern Africa; and the Dutch East India Company in 1600 for traffic with India and China.

Associations that have had an interest to Americans were the London and Plymouth Companies inaugurated in 1606 for colonization and trade in the new world. These companies had two classes of members, one resident stockholders who lived in England and furnished capital to the enterprise, the other, colonists who went in person on the great adventure to America. Jamestown and Plymouth are lasting monuments in American history to the chartered joint-stock association. Another company that made its impress on America was the Hudson Bay Company.

In our time the joint-stock association has been superseded almost completely by the corporation. Some of the recent railway express companies have clung to the more ancient form, and many mining ventures are conducted by the joint-stock association type of organization. In the latter case the inherent risk of the business militates against the corporate form with its limited liability, while partnerships would enlist too few persons, yield too little capital, and suffer too greatly from the untimely death of a partner to warrant its application.

In a few states, notably New York, joint-stock associations cannot be formed except under statutory provisions which subject the associations to considerable regulation and supervision. For the most part, however, joint-stock associations are obsolete forms of organization because they fit no real need in modern business.

CHAPTER XXIII

FORMS OF BUSINESS ORGANIZATION—COMPLEX UNITS

The Corporation.—A corporation is an association of individuals chartered by the state for the conduct of a business for profit, or for some other project in which profits are not the motive. A corporation, like a proprietorship, is an individual; it has a legal entity and within the limits of its charter may act, or be acted upon, as if it were an actual person.

Corporations differ from proprietorships and partnerships in that they do not exist by the will of one or by the mutual agreement of interested parties but are the creatures of the state. The state alone gives life to the corporation. Before 1825 the state created corporations only by special legislative enactment. But beginning then in New York and followed by Massachusetts, general incorporation acts were passed, which stated the conditions under which a charter would be granted. By 1875 all the states had similar general incorporation laws. Corporations have only such powers as the states grant in the charters, and power to appeal or amend charters is now generally reserved by the states.

Three or more persons may organize a corporation. By compliance with the state's general incorporation act a charter may be secured. Once organized the corporation has continued existence because its capital stock is divided into transferable shares. To be sure, some states for some businesses, such as public utilities and banks, limit the life of the charter—hence the existence of the corporation—to 25, 50, or 99 years. A corporation's liabilities are limited to its capital.

Types of Corporations.—By far the most numerous corporations are those formed to conduct a business for profit. They are common forms of organization for manufacturing, mining, retailing, banking, and selling insurance. Railroads, gas, electric light and power, and water companies are almost always corporations. Enterprises for buying and selling, amusement and recreational ventures, are also found as exemplifying this form of organization. In short, there is hardly any type of business that is not represented in the ranks of corporations.

A corporation is called “domestic” if it obtains its charter in the state where it does the bulk of its business. It is “foreign” if its sanction came from some state other than the one in which its business is principally carried on, and it is “alien” if it derived its life outside of the United States.

Not all corporations are organized to enter business for profit. Cities may be corporations. So also may clubs, churches, schools, and charitable societies. But this book is concerned only with those types of corporations that are connected with business.

Ownership and Control of Corporations.—A corporation is owned by the persons who buy and hold its stock. Theoretically these stockholders also control the corporation, but practically the stockholders turn over their rights of control to an elected board of directors. These in turn exercise control only to the extent of formulating general policies, approving or prohibiting specific acts, done or contemplated. The actual control is vested in officers selected by the board of directors.

Distribution of Income.—Since the stockholders furnish the funds for the organization they are entitled to the net earnings of the business, but also they must sustain its losses. A stockholder shares in gains in the proportion that his stock

stands to the total stock issued. Conversely the stockholder is liable for losses, damage, debts, and the like, only to the extent of his stock.

Classes of Stock.—There are two general classes of stock, common and preferred. The common stock has no guaranteed rate of return, but is entitled to all the net profits after all the charges against the business have been paid. The dividend rate may be high or low according to the prosperity of the business. Preferred stock partakes of the nature of a bond in that it has a set rate of return and a prior claim on the earnings of the organization. But it gains nothing extra, as a rule, from an especially prosperous business year. Each of these two classes of stock may be split up into special subdivisions. Thus common may be "A," "B," or "C," while preferred may be first or second, cumulative or non-cumulative, participating, convertible, or redeemable. The reason for this confusing variety of stocks is to give varying grades of risk and control or varying shares in income. Multiplication of stock issues leads to much confusion and not a little deception. It would be desirable to simplify such a complex mass of security issues.

Common Stock.—Common stock generally bears the greatest risk and hence carries ultimate control through voting power, the election of directors, and all powers not expressly granted elsewhere. The common stockholder, as we have shown, is the residual claimant to earnings, and he shares in earnings only after all other claims have been met. Dividends may be unpaid and the amount carried to surplus for a period of years. For example, the Carnegie Steel Company for years passed its dividends on the common stock and used the net earnings to equip its plants thoroughly and to perfect its organization. Since the bulk of its stock was held by comparatively few people, substantial unanimity in this policy was easily obtained.

In some corporations common stock is the only outstanding obligation. There is in such cases only one type of stock and the organization is a good deal of a family affair. Thus, the Arlington Mills, located at Lawrence and Methuen, Massachusetts, manufacturing cotton and woolen goods, have \$6,000,000 common and no other stocks or bonds. The Mergenthaler Linotype Company has \$12,786,700 common which has paid 15% dividends yearly. The Singer Sewing Machine Company has \$60,000,000 in common stock, and the Pullman Car Company \$120,000,000.

Preferred Stock.—The preferred stockholder generally takes less risk than the common stock owner and in consequence must be content with a limited predetermined income. However, among the many industrial, railroad, and public utility companies of this country there appear a goodly number of variations to this rule. Income on preferred stock varies generally from 4% to 8%. Union Pacific Railroad preferred carries 4%; Southern Railroad 5%; the American Agricultural Chemical 6%; Central Leather and International Harvester preferred 7%; and United States Rubber, first preferred, 8%.

Cumulative Preferred Stock.—Preferred stock may be cumulative. If the regular rate of dividends is not paid in one year, that is, if dividends are passed, the amount accumulates and must be paid the succeeding year if dividends are declared, before anything at all can be distributed to common stock. For illustration, suppose the Baldwin Locomotive Company passed its 7% dividend on preferred for the years 1922-25. In 1926, if dividends were declared, 28% must be paid the preferred stock before the common could receive a cent. It is apparent that such a policy may jeopardize the interest of the common stock for a considerable period of time and put it into the class of speculative stock. The only redress of the common stockholders is to elect a board of directors—

provided they have the voting strength—which will be more reasonable in regard to the payment of dividends.

Participating Preferred Stock.—Some preferred is participating stock. By this is meant that after the payment of the regular rate of dividend, the preferred shares with common on some prearranged basis in the remaining earnings. In the case of the Chicago, Milwaukee and St. Paul Railroads, after 7% has been paid on common the preferred shares equally with common in what is left. Thus, preferred receives the first 7%, common then receives 7%, and if anything is left, common and preferred share it equally. The 7% preferred of the Chicago and Northwestern Railroad receives its guaranteed 7% from earnings, after which common receives 7%, and then preferred is entitled to 3% additional dividends. This would make the preferred dividend 10%. Yet the amount of common stock is six times that of preferred.

Convertible Preferred Stock.—Still another feature of some preferred stock is that of conversion into common immediately after a certain date or within certain dates. Conversion is at the option of the holder. Stock having this right is called convertible stock. The exchange may be effected in any proportion agreed upon. The only reason for the exercise of this right is to gain voting power, or to obtain the higher rate of dividend that is about to be paid on common, in a successful business year. The 7% preferred of the Dominion Iron and Steel Company is convertible at any time into common. Allis-Chalmers preferred was convertible on any first of May, up to and including May 1, 1921.

Redeemable Preferred Stock.—Preferred stock is sometimes further modified by attaching to it a redeemable feature. That is, if the common stockholders for any reason wish to retire some of the preferred stock, they may repurchase and

cancel that preferred stock which when issued was subject to recall at the option of the common stockholders. One of the most interesting illustrations of the use of the redemption privilege occurred in 1901 in connection with a fight between the Harriman and the Hill interests to gain control of the Northern Pacific Railroad. The capitalization of the road was \$155,000,000, of which \$80,000,000 was common stock and \$75,000,000 preferred, the latter conditioned by the redemption feature. J. J. Hill and J. P. Morgan owned \$26,000,000 common, Harriman and his financial backers—the Kuhn-Loeb Syndicate—cautiously bought \$37,000,000 common and \$42,000,000 preferred. This gave them a clear majority control. Hill and Morgan, made aware of what was going on, bought more common until they held \$42,000,000 of this stock, which gave them a majority of \$2,000,000 of common. Although the preferred stock had equal voting power with common, it was subject to redemption at par up to January, 1917. Hill and Morgan, once they held a majority of the common, announced their intention to redeem the preferred stock according to the conditions specified. They succeeded in doing so. All that the Harriman interests got out of the conflict was one representative on the board of directors.

Other Privileges of Preferred Stock.—Preferred stock may be limited, privileged, or safeguarded by still other stipulations. Ingenuity constantly devises unique obligations in reference to preferred stock. For illustration, before any further issue of preferred stock, or the placing of a new mortgage can be accomplished by the Atchison, Topeka and Sante Fé Railroad, consent must first be secured from a majority of the present preferred stockholders; their stock gives them that power. Again, if the Wisconsin Central Railroad fails to pay the 4% dividend to its preferred stockholders for two successive years, they have the right—vested in their preferred stock—to elect a majority of the board of directors.

Voting Trusts.—Sometimes the stockholders of a corporation, wishing to perpetuate a particular policy, concentrate control or reorganize, give up all their voting rights in their stock, and transfer these rights to a group of men called trustees. The trustees as a body constitute a “trust.” The trust exercises all the voting rights of the corporation, but receives no dividends; the latter go regularly to the stockholders. If the guaranteed dividend to preferred stockholders is defaulted for successive years, they occasionally insist upon the formation of a voting trust, through which they hope to change sufficiently the policies or the personnel of the corporation in order that dividends may be earned for the preferred stock. Voting trusts have been organized within the General Motors Corporation, the Loose-Wiles Biscuit Company, and the International Mercantile Marine Company.

Corporation Bonds.—A corporation does not need to increase its capitalization and sell stock representing this increase in order to secure funds needed in the business. Indeed, too large a capitalization may be disadvantageous, for it would necessarily depress the *rate* of dividends and thus put the earning power of the corporation in a poor light and make sale of stock difficult. If taxation or other state fees are based on capitalization, it is desirable to restrict the capitalization of the corporation.

Instead of issuing more stock, the corporation may get the capital it requires by the sale of bonds. A bond is a mortgage whose security is either the physical property of the corporation, or some other asset with a marketable value. A bond thus differs from stock. It is not an evidence of ownership but is a lien. It does not participate in profit or losses but carries a fixed rate of interest return. But the interest on the bond must be paid regardless of the state of business, and is a prior claim before dividends on stock. A bond is not ordinarily speculative, whereas common stock is.

If a bond is not paid at maturity, or if the regular interest is defaulted, or if the security for the bond is permitted to depreciate, the bondholders may dispossess the shareholders from the management of the company.

Classes of Bonds.—Bonds are designated by various features that set them off from each other. Sometimes they are named in accordance with the method by which the interest is paid; for illustration, they may be *coupon* or *registered* bonds. Coupons are transferable certificates dated at interest periods and equal in value to the amount of interest due. Since the coupons are attached to the bond itself, they are conveniently cut off and cashed. But they are as easily lost, stolen, or forgotten, and therefore *registered* bonds may be preferred. The ownership of a registered bond is recorded in the books of the issuing corporation, and interest when due is paid by check, but only to the person in whose name the bond is listed.

Another way of classifying bonds is in accordance with the money in which the principal and interest are paid. Thus we have *gold* bonds, *currency* bonds, *franc* bonds, and the like.

Again, some bonds are named in conformity to the issuing body. For instance, we talk about *railroad*, *public utility*, *industrial*, or *government* bonds.

But the most varied classification of bonds is that which separates them according to the security behind them. Examples of this type of nomenclature are found in *mortgage*, *equipment*, *collateral trust*, *income*, and *debenture* bonds. These require some further explanation.

Mortgage Bonds.—In general, a mortgage bond is one which is secured by a lien on property. In the case of a corporation this lien is represented by a deed which is put in the hands of some trust company and stands as security for the whole issue of bonds. The trust company is expected to care for the advantages of the bondholder.

Equipment Bonds.—Equipment bonds are issued against the purchase of equipment, such as the rolling stock of railroads. Suppose, for example, a construction company were organized to purchase some locomotives from the Baldwin Locomotive Company. It might then lease these locomotives to a railroad company on terms of instalment payment. Bonds would be issued by the construction company and sold to the public. In this case the lease held by the construction company would be the security for the bond issue.

Collateral Trust—Debenture and Income Bond.—Collateral trust bonds are issued against the stocks and bonds of subsidiary companies which are held in trust as security for the issue. It is easier to raise money for a subsidiary by this device than by issuing mortgage bonds. Debentures are bonds which have no special security, such as a mortgage. The security lies in the general credit of the issuing company, but interest is definitely payable on such bonds, and the principal must be discharged at maturity. Income bonds on the contrary are those which do have some form of special security, but the interest is not paid unless it is earned.

Advantages of the Corporate Form.—No matter how corporations may modify the factors of ownership, control, and distribution of income by varying their arrangements respecting stock and bonds, they all have common advantages over the proprietorship and partnership. Foremost among these superiorities is the ability to draw large amounts of capital from widespread sources. As a matter of fact, many American corporations have derived capital from European investors as well as from people in every state of our own union. The division of capital into small transferable shares aids the financing of these corporate enterprises.

In respect also to their limited liability features, corporations are better equipped to meet modern business conditions

than the older and simpler units of organization. Perpetual life and legal personality add to the advantages of corporations. Their ability to hire experts for every need is another special attribute that places them beyond the competition of less advanced types of organization.

Disadvantages of the Corporate Form.—But corporations are not without their drawbacks. Since they are the creatures of the state, they are more peculiarly liable to suffer from exactions of fees, dues, and taxes than the independent forms of business. Furthermore, they are often called upon to furnish expensive reports to state authorities, to say nothing of the statements which they must submit to their own stockholders. The meetings of stockholders or boards of directors often prove to be costly obligations of a corporation.

The men in charge of operating a corporation work for a salary, and hence may not have the personal enthusiasm of a man who toils for a profit all accruing to himself. In its dealings with its own personnel as well as with outsiders the corporation is likely to become impersonal, "heartless," or "soulless." For efficiency it must often resort to various artificial goads. It generally lacks the freshness, spontaneity, and loyalty that is inspired in many proprietorships or partnerships by the personal magnetism of the head of the business. If the corporation is very large it may find difficulty in getting things done within its organization; rules become more important than ideas.

These shortcomings of the corporation, however, are so far outweighed by its advantages that the corporate form is the almost universal organization among the prominent businesses of the United States.

Compound Business Units.—Although the corporation rather than the proprietorship or partnership is a more adequate instrument for the modern plan of conducting business

upon a gigantic scale, single corporations, acting independently, have failed to meet the ultimate requirements of big business.

To dominate an industry, to penetrate the uttermost recesses of a continental or world market, to avoid the wastes of excessive competition, men have sought ways to combine individual corporations into colossal organizations controlled by powerful, centralized authority. This search has yielded many diverse devices. Among them are the merger, monopoly, agreement, community of interest, interlocking directorates, pool, trust, holding company, and leasing company.

Merger.—The most logical progression from single corporations to dominance of a field by one enormous aggregation is by the process of absorption. A large and strong corporation might gradually buy out its competitors, or put them out of business if they resisted loss of identity. As fast as a competing corporation was acquired it could be merged into the ascendent corporation, remaining perhaps as a department of the conquering business. This process in time, together with the killing off of recalcitrant corporations, would leave one great enterprise in the industry.

However, the merging of competitors into one corporation does not change essentially the form of business organization; it merely enlarges the size of a corporation.

Monopoly.—It is conceivable, too, that one great corporation could prevail in an industry not by merger but because of some monopoly privilege. The control of patents or franchises might be the basis of such a monopoly. Ownership or control of a limited supply of raw materials could also furnish the leverage for exerting monopoly. The lack of economy in competition as among public utilities tends to the creation of monopolistic operation in these enterprises.

Of course, a group of men holding a monopoly of any kind could organize themselves into any form they deemed advan-

tageous, but a monopoly operated by a single corporation, no matter how large, would not of itself evidence a new form of business organization.

Agreements.—Disregarding mergers and monopolies, therefore, let us take note of those large-scale businesses that use single corporations as units in combinations that are new as forms of organization. The first of these is the simple, informal agreement, one of the earliest types of combination.

An informal agreement was no more than an understanding among formerly competing corporations to maintain a specified production, and to sell for designated prices. The so-called "dinners" once popular among steel magnates offer a good illustration of the workings of informal agreements. Once a year for four years the heads of the big steel corporations met at a dinner in New York, and across the table discussed the whole situation in the steel industry, finally arriving at an understanding as to each corporation's production and price levels for the coming year.

Since a formal agreement to limit production and fix prices was prohibited by law, these informal understandings had no legal compulsion behind them to enforce compliance. The strength of the arrangements lay in their secrecy, and in the fear of retaliation if any party to them broke his promises.

Factors Agreements.—A special kind of agreement—known as a factors agreement—has often been entered into between producing and selling companies to govern prices and apportion territory of sale. Some of these agreements are international in scope. For example, the American Tobacco Company and the British Imperial Tobacco Company have agreed each not to sell in the national territory of the other, and to divide the markets of the rest of the world between themselves. Factors agreements to maintain retail prices have been used by the United States Rubber Company, the Standard

Sanitary Manufacturing Company, the Eastman Kodak Company, the Colgate Soap Company, and the American Sugar Refining Company.

Community of Interest.—Competing corporations have been known to gain the benefits of unified direction and action without actual organic union by means of “community of interest.” This phrase describes a condition in which several rival corporations have a common body of shareholders. The common group of men owning stock in the different corporations may constitute a majority in each, if that is necessary to gain dictatorial power; but frequently in some of the corporations entered, a unified bloc even though an actual minority, may be able to direct the policies and practices of the corporation. The compact group decides within itself what rules shall be established within an industry, and by its voting power in each corporation steers the corporations according to the arranged plan. This scheme has all the advantages of an organic union except centralized executive administration.

Interlocking Directorates.—A similar but simpler device for gaining the same objects is the placing of some of the directors of one corporation upon the directorate of competing concerns. Although these common directors must of course be also common shareholders in the different corporations, the number of shares they own need not be great. Interlocking directorates, being more obvious and tangible than community of interest, have come more definitely under the disapproval of our courts.

The Pool.—Prior to the formation of trusts and holding companies, a favorite method of eliminating price wars between opposing corporations, especially rate conflicts between railroads, was by means of a formal understanding known as a

pool. In addition to maintaining an agreed price, the members of a pool often agreed to respect each other's sales territory, thus giving each corporation a virtual monopoly in its own region. If geographical divisions were not thus assigned, then frequently the income from sales by all the corporations within given districts was turned into a common fund ("pool") from which at stated intervals each contributing corporation was allotted sums according to a predetermined percentage.

Not only was the "pool" used extensively by railroads but some famous industrial pools were formed among salt producers, cotton bag makers, distillers, cordage manufacturers, wire nail fabricators, steel rail and steel billet producers, and iron pipe makers.

The weakness of the pools was that they were outside of the law and no legal compulsion could be exercised to force compliance with the agreements. They rested upon promises and these under the stress of business exigencies were often broken. Pools were temporary expedients which afforded no certainty of fulfilling the purpose for which they originally were formed.

The Trust.—To overcome the ineffectiveness of the pool, there was introduced a form of organization known as the trust. Shareholders in competing corporations turned over their stock to a single board of trustees, receiving in return trust receipts. The trustees, having the voting power of the stock, used it to direct the policies of the various corporations according to a unified plan that would eliminate competition. The net earnings of the different corporations went as dividends to the stock held by the trustees. The trustees, then, out of the sums received in dividends from the individual corporations, declared dividends on the trust receipts.

A large number of trusts were formed in the years from 1880 to 1890. Among the more notable ones were those devised by the groups controlling the Standard Oil, the Amer-

ican Sugar, the National Lead, the Distillers, and the Cattle Feeders.

Adverse decisions by the federal and state courts in 1891-92 killed the trust form of organization. But since Massachusetts law does not permit a corporation to hold real estate as an investment many voluntary associations, that closely resemble trusts, still exist in that state. This is true of the electric railway companies of eastern Massachusetts, the Massachusetts Gas Companies, the Ludlow Associates (textile manufacturers), and the Amoskeag Manufacturing Company, whose cotton and wool mills are located in New Hampshire.

Holding Companies.—To gain the ends of the former trusts and yet stay within the law a new organization was created called a holding company. This is a corporation whose sole purpose is the holding of stock of other corporations. By this means, of course, the controllers of a holding company may direct the corporations whose stock is corraled.

Until about 1890, the weight of legal opinion was against the holding of the stock of one corporation by another. But in 1889, first New Jersey and then rapidly New York, Delaware, Maine, West Virginia, North Dakota, and other states legalized this practice by legislative enactment. Holding companies in great numbers followed upon the heels of these laws.

But in 1904 the Supreme Court having before it the notorious Northern Securities Company—a holding company designed to weld together the Great Northern, the Northern Pacific, and the Chicago, Burlington and Quincy Railroads—declared this company guilty of a conspiracy in restraint of trade. The decisions in this case and in others such as the Standard Oil, DuPont Powder, and Union Pacific Railway cases have been effective in rendering monopolistic holding companies illegal and forcing them to dissolve.

However, a holding company need not be monopolistic in deed or purpose. Those that are not monopolistic have not

been declared invalid and unlawful; in fact, holding companies are now the most general organization device used to co-ordinate or combine the interests of separate corporations.

The Leasing Company.—One other scheme has served to weld corporations together, namely, the lease. Although the leasing of one corporation by another has never been common among industrial concerns, it has been in familiar use by railroads. A dominant railroad corporation may obtain control over the business policies and operating organization of weaker lines by means of a direct money rental. This is done oftentimes to gain entrance to a territory, to obtain favorable terminal facilities, or to make desirable connections.

The lease may be for a temporary period or in perpetuity. If the rental is directly paid in money, the revenue of the leased road generally reverts entirely to the leaseholder. However, a contingent lease may be signed whereby the profits arising from the leased property are divided between the lessor and lessee according to terms laid down in the lease itself.

It has been charged in some cases that previous to the signing of a lease the dominant party buys sufficient shares of the weaker to gain authority in the deliberations of the weaker. The strong corporation uses this power to compel the other to execute a lease especially favorable to the lessor.

Since leasing requires complicated bookkeeping and may disturb efficient operation, it frequently occurs that after a term of leasing, the weaker corporation is purchased outright by the aggressive corporation. This absorption wipes out the intercorporate relationship, and sets up the simple single corporate form of organization. The former independent corporation becomes merely a department or division of another corporation.

Other Forms to Come.—Since the trend of industry is toward the corporate form of organization, and inasmuch as

the constant advance toward a larger scale of operation necessitates the co-ordination of separate corporations, it is not likely that all the possible methods of interrelating corporations have already been tried. As practical and legal difficulties arise with the older forms, new ones will doubtless be devised, to gain the desired ends without the weakening disadvantages.

Since business organization has a propensity in these directions, the interest of the public needs constantly greater safeguards. A knowledge of the relation of the state to industry, therefore, is a requisite part of a study of our industrial order. This topic is treated in the following chapter.

CHAPTER XXIV

RELATION OF THE STATE TO INDUSTRIAL ENTERPRISE

Introduction.—By the state we mean the common, supreme, independent authority through which the collective will of a group of persons is expressed and enforced in a geographic area.

Although a thorough discussion of the functions of the state lies within the domain of political science and not of economics, nevertheless the modern state in many of its activities so vitally affects the relationships of business, that a study of industrial organization would be incomplete which did not include an inquiry into those state exercises that concern business. To this extent political science and economics overlap. Historically, the state has applied three methods of dealing with business. One, followed in the ancient and medieval times, was a strict, minute regulation of every industrial endeavor. The second, prevalent at the time the United States became a nation, was the loosening of all bonds of the state upon private enterprise and granting the utmost individualistic freedom. The modern state steers between these two courses, following a compromise policy. A fourth measure has been advocated by the socialists, namely, the ownership and operation—not the mere regulation—by the state of all industry except that which is clearly personal in character. Cities have supported this theory in practice in respect to many business functions, and the larger governments, even the federal authority itself, have drifted toward similar actions.

Ancient Regulation.—Ancient governments conceded little to individualism. Custom, religion, and law prescribed in detail nearly all the acts of every man. Not only were existing manufacture, trade, and commerce conducted by rule, but even personal matters were similarly regulated. Thus the Mosaic law ordered what should be eaten and how it should be cooked or served, what clothes were to be worn for every occasion, and who should marry. The Greeks and Romans lived under a like régime of authoritative order, and the early Germanic peoples, although somewhat freer, were in general held in the leash of public power. Under these circumstances there was little opportunity for the expression of individuality in industry, and the expansion of business found few favoring factors.

Medieval Authority in Agriculture.—During the Middle Ages business activity was similarly regulated by authority. Agriculture was organized under the manorial system. A manor was a piece of land averaging about 5,000 acres held by an overlord subject to the crown, comprising a military and fiscal unit, and containing from 60 to 80 tenants. It consisted of a village surrounded by three great fields: one fallow, one sown in winter wheat or rye, and one planted in the spring with oats, barley or peas. Each field was divided into strips, each originally an acre in extent but eventually averaging about one-fourth to one-half an acre apiece. The manorial tenants had the use of these strips, some in each field but none of them connected with each other. The number of strips worked by each tenant was graded according to his rank in the manor, the men of the highest rank having ten in each of the three fields.

The services, payments, obligations, and privileges of each tenant were regulated in detail by custom and law. So, too, the crops to be planted, the time and manner of seeding, cultivation, and harvest all were held to a prescribed order. There

was almost no allowance for individual initiative, and generations followed each other with no marked change in any circumstance surrounding their lives or their work. Personality was subordinated to rule.

Medieval Authority in Manufactures and Trade.—Like-wise the handicrafts involving all manner of known manufactures located in the towns were organized into guilds under royal authority. Each trade had its own exclusive guild, with rights set forth in a charter or a decree from the king.

Within each guild membership was carefully safeguarded by rules. The time, place, and manner of work were dictated by the guild government. Weights and measures were determined by law and maintained by rigid inspection. Absolute equality of opportunities and facilities for doing business was commanded. Even the personal conduct of members was dictated by the guild. Recalcitrant members were forced to obedience by fines, by the temporary removal of their tools, or, in extreme cases, by expulsion from the guild. Since a tradesman could not carry on business independent of the guild, and was not permitted to change trades or join another guild than the one to which he belonged, expulsion was well-nigh equivalent to a death sentence.

Merchants or traders, too, had their guilds. Indeed, they preceded the crafts in guild organization. Detailed regulations for conducting trade were laid down by these merchant guilds, and no man dared violate a single stipulation.

Toward the close of the medieval period, when the power of the guilds had been lessened, the regal regulation of trade took the form of designating particular places where wool, tin, leather, lead, and the like could be manufactured or sold, as well as ordaining the methods and means to be used. For like purpose the sovereign granted monopolies to certain places, or to certain groups of men, for the regulated conduct of special businesses.

The Revolt from Regulation.—The philosophical basis for this age-long direction of the mass of men by supreme authority lay in the belief that men were naturally evil, and if left to themselves would injure the persons or property of others as well as falling into vicious sin on their own account.

The revolt from this conviction concerning human nature, involving also a rebellion against the institutions that had been established in accord with the ancient dogma, came first in religion, being exemplified on the continent of Europe by the Protestantism of Martin Luther and in the British Isles by John Calvin and John Knox.

The French Revolution carried the issue into the political arena. For decades thereafter the world surged with the popular uprisings favoring democracy in political matters.

Finally, the passionate outburst against all restraints reached business. It was accompanied by a relatively sudden and amazing change from hand-tool production to mechanicalization, especially in the great textile industries of Great Britain. The men who were at the forefront in the rising factory movement were impatient of all restrictions upon their business activities. With a new method of manufacture they insisted upon complete freedom in the conduct of business so that by experiment they might wrest from machines their fullest potentialities.

Laissez Faire.—A theoretical justification for removing all shackles upon industry was contained in Adam Smith's "Wealth of Nations," a book published in 1776.

According to Smith the greatest happiness to everyone may be assured by permitting each individual to secure for himself without hindrance of any sort what seems to him best for his own well-being. The natural corollary to this assumption is that the state does the most for general welfare when it permits every man to do the most he can for himself; that the best government is that which governs the least.

The business men of the period gained rapidly in political power, and supported by these "laissez-faire" theories of Smith which had received widespread public acclaim, removed from the statute books of Great Britain much of the legislation that had obstructed the advance of industry. Apprenticeship and combination laws, exclusive privileges to towns or groups of persons, pauper relief laws, protective tariffs, and the like, fell more or less completely under the ban of successive Parliaments. Ancient and medieval authoritative regulation of industry was destroyed by a modern enthusiasm for individual liberty.

The Birth of Our Nation.—In the midst of the excitement for laissez-faire the United States was born. Our existence as a state was a crystallization of the ideas of individualism, freedom, and liberty, a fact which is amply demonstrated by the public documents incident to our birth. The letters, memorials, and personal representations of our countrymen to Parliament, King George III, and prominent British statesmen prior to the Revolution, were eloquent protests against the crown's policy of restrictions upon American industry and trade.

The Declaration of Independence reflected the spirit of the time when it stated: "We hold these truths to be self evident, that all men are created equal, that they are endowed by their Creator with certain inalienable Rights, that among these are Life, Liberty, and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed. That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundations on such principles and organizing its powers in such form, as shall seem to them most likely to effect their safety and happiness."

The similar language of the Virginia Bill of Rights issued June 12, 1776, illustrated again the acceptance by the Americans of that day of the radical beliefs of the age. The preamble to the Constitution of the United States still further conformed to the prevailing sentiment when it declared: "We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and to secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America."

Special Fondness for Individualism in America.—The economic environment of the new American nation made our forefathers especially ardent disciples of individualism. Their country was new without the encrustations of traditions that bound the older European nations. The novel situation called for unique, untried devices in politics and industry. Freedom to experiment was essential to their economic adaptation to their environment. Most of the settlers, too, had come to America from the subject classes of Europe with the hope that here they could escape thralldom and rule themselves. Those who went to the frontier soon acquired the frontiersman's independence of spirit that vigorously resisted any restraint.

Crystallization of Individualism in America.—Thus it came about that with this natural inclination toward individualism, heightened by the onerous royal regulations that brought about the Revolution, the men who founded our State based it upon the ideal of complete freedom of contract, and made the central government merely an agency for the protection of life and property. Written into constitutions, both national and local, laissez-faire became more rigidly fixed in the United States than in any other part of the world.

The belief that everyone has, and should have, an equal

chance became imbedded in the consciousness of Americans and was reflected in the court decisions under the Constitution and its amendments. These facts have made it extremely difficult to apply any governmental curb to business.

Need for Regulation.—However, as our industrial system has developed, grievous evils have appeared, growing out of unrestricted individualism. The doctrine of “let the buyer beware” left consumers unprotected from all kinds of unfair trade tricks, ranging from misrepresentation of goods to various more or less harmful adulterations and even to dangerously poisonous concoctions.

Similarly, the “public be damned” policy of many business or service corporations led to unfair, anti-social, and even perilous practices.

Employers, unrestrained, have been known to overwork and underpay their laborers as well as to cheat them scandalously by various devious devices. Workmen, too, have been unnecessarily subjected to industrial risks and hazards.

Investors have had no safeguard against fraudulent promoters. “Wild-cat” business schemes have ruined many an unwary man or woman. Other enterprises not deliberately dishonest, nevertheless have been over capitalized, unknown to the investors whose funds were sucked into the corporation and sunk.

Not only these specific needs have called for state intervention but also the general change in the character of business. Whereas industry was formerly simple in organization, personal and local in its contacts, and manual in its operations, today it is complexly organized, indirect, national, and international in its contacts, and astonishingly mechanical in its operations. Industry unfettered would go a long way to enslave men instead of serving them in the mass. The only way the crowd can save itself from the oppression of industry, and force industry to use its new characteristics for the bene-

fit of society, is to employ the collective being of men, namely, the State, as the regulator of business.

Gradual Growth of Regulation.—Knowledge of these things slowly dislodged the notion that regulation was abhorrent, and the freest individualism was beneficent. Timidly at first, then more boldly, legislation was enacted to put bounds to the individualism of industry. This policy was justified theoretically upon the grounds that in America all men participated in the government, and hence they but restrained themselves when they legislated in favor of governmental interference with business. The older governmental checks upon individualism had been promoted by a privileged class in its own interest, a thing quite different from self-limitation.

Labor Legislation.—Labor, having the vote and suffering keenly from the injustices of unhampered industry, was the first seeker of governmental intervention. It secured laws that made it a favored creditor, that is, wages were made a prior claim upon a business. The place, manner and method of wage payment were also safeguarded by legislation. Tools and a minimum sum of wages were exempted from liability of attachment for debt.

With this start a flood of labor legislation has followed, some of it intended to preserve the health of workers, some designed to insure safety, some fixing maximum hours of work or minimum wages, and some granting different forms of insurance against the risks and hazards of industry. Women and children as workers have received benefits and protection from legislatures.

Protection of Consumers.—Consumers have been legally protected against the precept of "*caveat emptor*" by such acts as the Pure Food and Drug Law, requiring manufacturers to comply with regulations as to the contents, weight, size, and

labels of containers. Tenement inspection laws by which work done in homes is publicly supervised were passed in the interest of consumers.

Safeguarding Investors.—Investors have been granted security by laws that restrict or inspect the issues of new capital stock. The requirement of published reports from various industries is in the interest both of investors and the general public. Of like character are the acts which define what insurance, trust companies, or savings banks may or may not do as their regular business.

Restriction of Monopolies.—As we have shown in Chapter XXIII, Americans have been especially afraid that large-scale business operations would develop into monopolies, and so by legislation and judicial decision have directed what forms of business organizations are prohibited, as well as what practices of corporations will eventually lead to their dissolution.

Railroad Regulation.—Likewise the railroad corporations, once free to do as they pleased, have been gradually brought under government regulation. At first this guidance was weak and largely advisory but now it is strong and mandatory. In fact the railroads have but little range of entire freedom of action.

General Legislation Property Laws.—As a matter of fact, nearly every law passed by a legislature has some direct or indirect bearing upon business. Any law affecting property is of immediate concern to industry. Taxation upon business property is a ready means of regulating the business. Changes in commercial law, particularly those dealing with patents, trade-marks, copyrights, and price-fixing, may easily take on regulatory characteristics.

Criminal Laws.—Even modification of the criminal law may be influential in curbing business, for such law may not only bring industrial concerns within the scope of its power, but negatively by removing acts against industry from the category of crimes may cause business men to seek sympathy for their causes by appealing to public opinion. Thus, if the Clayton Act freed unions from certain criminal prosecutions employers would be more chary of exciting the animosity of unions, and more anxious to placate public opinion by actions favorable to labor. Or again, if employers could not use injunctions or contempt-of-court proceedings against their employees, they would have to be more careful in their dealings with their workers.

On the other hand, if strikes were made illegal, and if workers' cases were compulsorily brought before industrial courts—as is the case in Kansas and Colorado—the freedom of action of labor unions would be rigorously curtailed. Conversely in these circumstances business would be freed from the fear and the losses of strikes.

Financial Laws.—Financial and fiscal legislation may react upon industry as a check, as was true of the excess profits tax levied during the World War, or it may divert investment into non-business channels, a result which followed upon the creation of tax-exempt securities at that same time. Contrarily, fiscal legislation may promote business, or at least be intended for that purpose. This idea lies behind tariff legislation and governmental subsidies.

Promotive Legislation Tariff.—The theory of a protective tariff includes, in addition to the raising of revenue, the preservation of infant industries. A high tariff on foreign-made goods shuts them out from competition with our domestic manufactures and consequently reserves our national market for our own producers. There can be little question

that our high tariff policy has nurtured many American businesses, but there may be considerable speculation as to whether the tariff wall was not kept intact much longer than was necessary. If this is true the tariff as an aid has outlived its usefulness and has become a tax upon the many for the benefit of a few.

Special Aids.—In order that some industries might thrive within our territories and render us independent of foreigners, not only the tariff but special aids have been granted by legislatures. Bonuses on sugar, subsidies to the merchant marine, and lucrative government contracts to shipyards, have all been employed for this purpose.

Export Encouragement.—Of like intent have been the laws to encourage foreign trade. The tariff on imported raw materials has been remitted when they were manufactured into articles destined for re-export to a foreign market. More recently the legal restrictions upon combinations have been lightened so far as the combinations were effected to further foreign trade. This was done because collective assault upon alien markets was seen to be more effective than the action of individual companies. The change in the character of our exports from raw materials which other nations were compelled to buy from us, to manufactured goods as to which we had to meet the aggressive competition of many alien producers, made it imperative for our Congress to remove all needless shackles from this export business.

Local Government's Acts.—The various enactments so far cited as promotive of business were national, but local governments have done their share to further industry within their bounds. States have passed laws aimed at the early development of their natural resources, and municipalities have remitted taxes, waived burdensome ordinances, and even

granted financial assistance in order to attract new industries to their limits, or to aid those already there.

Policy of Regulation Established.—As a consequence of the multiplicity of repressive, regulative, or promotive measures, our federal and state governments have departed a long way from the theory of individualism and freedom of industry held by the founders of the republic. The change has been made despite the tenacity of the older ideas and against the friction of the constitutional provisions set up by our forefathers. But by the process of turning to the state for relief against the oppressions of industry, the state has been finally established as the paramount regulative agency.

However, what the state has done as the overlord of business is small in comparison to what it is urged to do. Nationalization of the key industries such as the railroads, the mines, the telegraphs and telephones is a program pressed upon the states. The "Single-taxers," too, plead that the state shall appropriate all the unearned increment from land. Syndicalists preach the doctrine that all industries should be handed over to workers within them, thus setting up segregated industrial states co-ordinated by federation. The socialists ask that the state own and operate all industries. This proposal, so radically divergent from our previous policies, necessitates fuller discussion.

The Socialist State.—Instead of distrusting the state and seeking to confine it to the narrowest activities, the socialists look upon the state as the highest human institution. They wish to entrust to it not only the ownership and operation of all essential industries, but to recognize it as the primary agency for the promotion of the intellectual and moral interests of all the people as well as the executor of all their economic and social wants.

The socialists argue that the existing social order is unjust

to the workers, on the ground that the workers, who produce everything, are robbed of the fruit of their toil by landlords, speculators, middlemen, and employers. The socialists claim that the evolution of industrial organization from simple to complex forms causes the rich to grow richer and fewer, while the poor are made poorer and more numerous. The only way, according to these theorists, for the masses to regain control of industry is to have the state wrest business from the few men who own it and who wallow in its profits.

Competition, to a socialist, is a discredited method of business. Under it the masses have suffered from alternating periods of prosperity and depression. The extravagant waste of unnecessary duplication of effort common to competition, to say nothing of the losses incurred by overproduction or faulty distribution, condemn competition as a social principle of business. The socialists would replace competition by universal co-operation compelled and regulated by the state.

The Socialists' Mistakes.—But these views held by socialists overlook many important considerations. First of all, men are not yet so altruistic as a socialistic state would require. The selfish incentive to acquire private property and build private industries motivates men more keenly than the desire to work together for common rather than individual good.

Secondly, the state has never shown marked efficiency in the conduct of business. Bureaucracy with its unyielding arbitrary routine, political favoritism, slowness of action, hesitancy to try new methods—all of these have accompanied the state's essays into business. This experience would cause thoughtful men to hesitate before entrusting larger industrial responsibilities to the state.

Moreover, efficiency in business has been promoted by functionalization; the fewer tasks a man had to perform, the better he did them. This principle applied to our largest-scale industries has led to decentralization of authority. . Socialism

would run counter to what has been learned, and would heap unrelated complex problems upon highly centralized state officials.

In conclusion, it may be pointed out that a socialist state would not grant greater individual freedom but by its very nature would control its citizens as a general staff does the privates of an army. Individualism would be subordinated to officialdom, private initiative crushed under the weight of discipline.

Drift toward Socialism.—Yet, no matter how much we may favor or disfavor a completely socialistic state, we cannot deny that there has been a decided drift in that direction. The government for a long time has managed the post-office. It has assumed part of the express business by its adoption of a parcels post system. It has built and operated vast irrigation and power projects. It has managed a great fleet of merchant vessels. For a time it operated railroads, and telegraph lines. The lesser governments have established and managed schools and universities. They also have introduced and operated various insurance schemes. Outside of our own country the Germans, French, and British—particularly the British dominions—have gone much further in these matters than we have.

Most of these illustrations of state intervention in business, however, were not undertaken from economic motives. Some were occasioned by war emergency. Others were conditioned by social or moral considerations. In any event, the acceptance of part of a program does not necessarily imply the approbation of the whole.

Cities' Business Activities.—The best illustration in America of direct governmental participation in business is found in the activities of cities.

In 1915, American cities had over a billion dollars invested in municipal business enterprises. About 90% of this amount

was placed in water supply systems. Most of the remainder was held in park and recreation facilities or in educational institutions. The disposal of sewage and garbage was another typical city business in which much money was invested. Moreover, many cities own and operate some or all of their own public utilities in addition to their water supply systems.

Clearly the cities did not undertake these enterprises purely for economic reasons. Regard for public sanitation and health, or the enhancement of public intelligence, were the motives behind these activities.

But there are illustrations in the United States of cities that have gone into different types of business more largely for economic reasons, oftentimes to exercise a wholesome regulation of prices. Thus Los Angeles has a municipal garage; Kansas City, Missouri, owns an electrical supply store; Twin Harbors, Michigan, has a municipal coal yard; Weatherford, Oklahoma, conducts an ice business; and Sabetha, Kansas, possesses a city heating plant. Boston, Los Angeles, Seattle, and other ports own, operate, or control dock and harbor facilities, and many cities provide retail and wholesale produce markets.

Although many of the city business undertakings have proven economically profitable, the total results of such activities have not been so largely successful as to encourage rapid expansion of city functions in the direction of business enterprise.

Conclusion.—Thus we come to the conclusion that, of the methods or policies of the state toward business, three historical and one theoretical, only one has received wide acceptance in the United States. We seem thoroughly wedded to private enterprise, but with the proviso that when private business becomes affected with a public interest, then the state shall regulate it in accordance with the welfare of the majority of the citizens.

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1. Transportation.
2. Storage.

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2. Risk taking
3. Standardization

Land Capital ^{created materials}
Labor ^{Productive} Management ^{Natural}

Stages of Industry
^{starting} & Fishing

Pastoral

Agriculture

Hand

Mach

Relation of

1. Drives

2. Right

3. Distrib

4. Fixed

Industry

1. Concentr

2. Segrad

3. Extensio

4. Loss of con

5. Increase in

Res

1. Accumu

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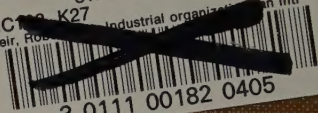
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